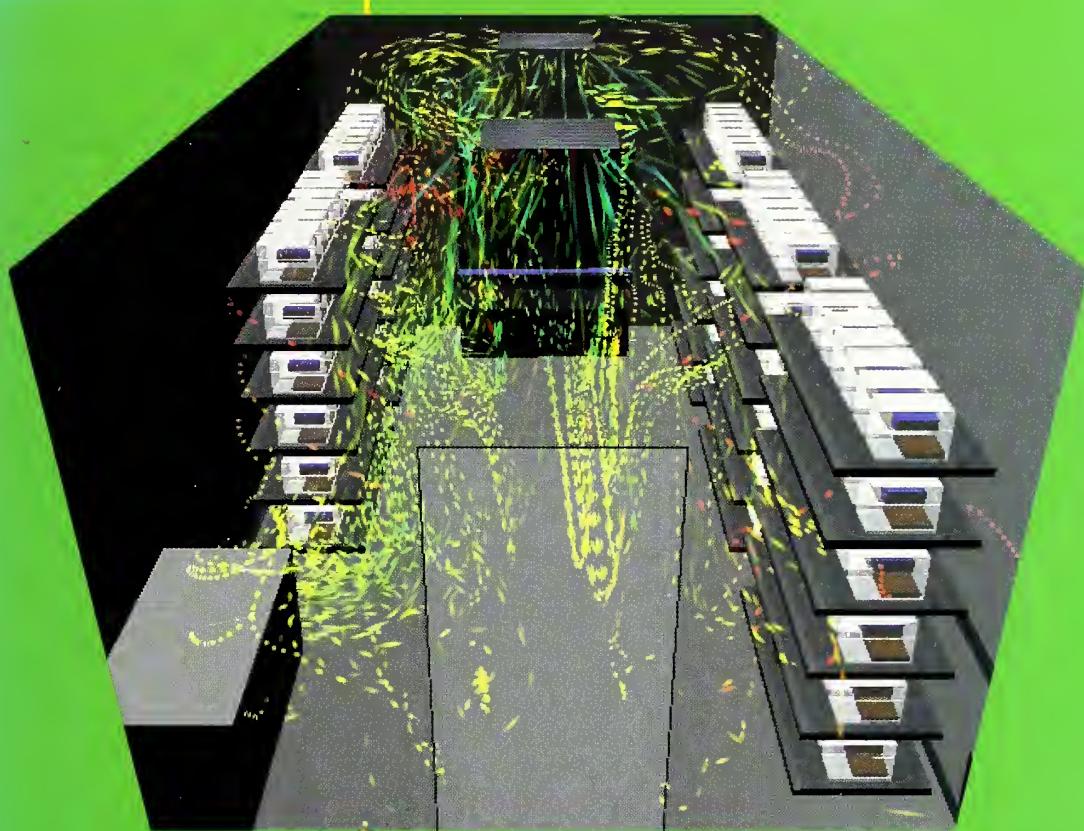


VENTILATION
DESIGN
HANDBOOK ON

Animal Research Facilities Using Static Microisolators



2
VOLUME
OF 2

NATIONAL INSTITUTES OF HEALTH
OFFICE OF THE DIRECTOR



National Institutes of Health

**Ventilation Design Handbook on Animal Research Facilities
Using Static Microisolators**

VOLUME II



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1. INTRODUCTION

This volume contains a database of the results of the computational fluid dynamics (CFD) simulations for the research done on the National Institutes of Health *Ventilation Design Handbook on Animal Research Facilities using Static Microisolators*.

Section 1 contains an overview of the basic room configuration studied and the variations considered. It is impossible to present all the data generated by the CFD simulations. The analysis of all the results produces an enormous quantity of data that would be difficult to present and interpret in its entirety. This volume contains summaries of the data in several forms.

Section 2 contains histograms of mean values for each room considered, as they apply to both the scientists' breathing zone and the cages, for temperature, relative humidity, and CO₂ and NH₃ concentrations.

Section 3 contains rankings of the rooms based on different variables, for example, the selection of the room configuration with the lowest NH₃ concentrations in the cages.

Section 4 contains a two page summary of each room simulation, including a description of the room, mean values and standard deviations for all parameters, and histograms showing the distribution of values in the cages.

1.1 Outline of CFD Baseline Model

A typical animal research facility of average size, air change rate, rack layout, mouse population, pressurization, and so on, was modeled as the baseline model for the CFD simulations. The general features of the room are shown in figure 1.01 and are listed below.

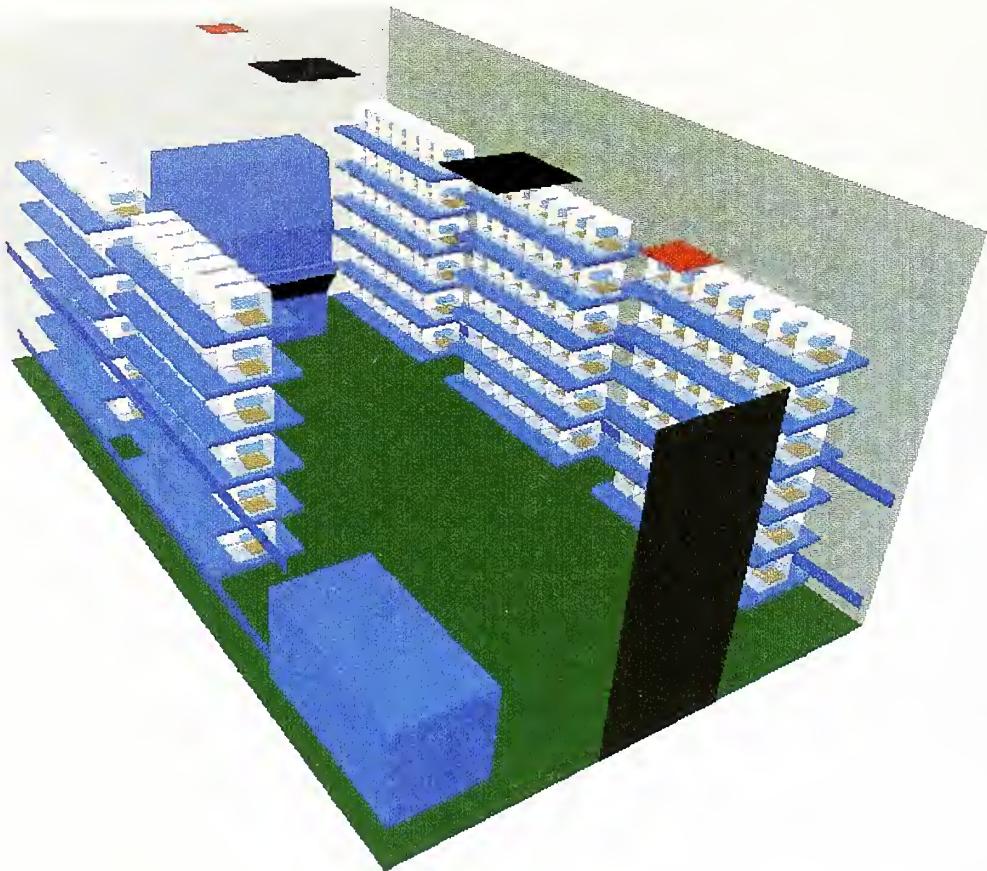


Figure 1.01 Overall Layout of Animal Room Basecase

Description in brief

The general features of the basecase room model were:

Room: 6.10m x 3.60m x 4.22m (20' 0" x 12' 0" x 9' 0")

Door in short wall

Sink in corner

Laminar flow change station

5 racks

Cages: Microisolator (with filter top) mouse cage

5 mice per cage

Rack: Static system

6 shelves per rack

7 cages per shelf (42 cages per rack)

Supply: 2 radial supplies each providing 270cfm (0.13m³/s) for a total of 15 ACH

Supply discharge temperature of 18.8 °C (66 °F), set such that the exhaust air temperature was 22.2 °C (72.0 °F)

61 percent relative humidity (to provide 50 percent RH at 22.2 °C (72.0 °F))

Exhausts: 2 ceiling level exhausts removing 220cfm (0.1m³/s) each

Makeup Air: 100cfm (0.047m³/s) coming from around the door

Overall Geometry

In the majority of the cases considered, the animal room occupied a floor area of 6.10m (20' 0") x 3.66m (12' 0"). In some cases that were considered, the width of the room was increased from 3.66m to 4.22m (14' 0"). The ceiling height in all cases was 2.74m (9' 0"). There was only one door in the room, mounted centrally on one of the short walls.

In all the displacement ventilation systems considered in this project, air was introduced through ceiling mounted diffusers. All devices were mounted flush with the ceiling surface; there was no ductwork present within the upper room volume. The various diffuser types considered in this project were all modeled using a combination of several boundary conditions that were validated previously (see volume I, section 4.2.2). All the air exited through general exhausts. The number and locations of the exhausts were varied. In line with common practice, there was an imbalance between the amount of air supplied to the room and exhausted from the room. This leads to an overall pressurization of the room relative to the rooms or corridors surrounding the room. The relative level of pressurization was a parameter considered in this study. The makeup air to compensate for the supply/exhaust imbalance was allowed to enter or leave the room through 6.35e-3m (0.25") gaps on three sides of the door.

The rooms considered in this project all contained five animal cage racks. The rooms also contained one of two alternative design change stations. A fuller description of these items is given below. The only other item within the room was a sink of 0.61m (24") x 0.61m (24") x 0.81m (32") that was situated in one of the corners to the room.

In all cases, the room was considered under dark period conditions, i.e., the lights were off and produced no additional heat load to the room. Dark period conditions were chosen because early experimental work had indicated that heat, CO₂, and NH₃ generation were higher in the dark period compared with periods in which the lights were on.

Rack Model

The overall dimensions of the rack were 1.52m (60") x 0.61m (24") x 1.83m (72") high, as shown in figure 1.02. There were six shelves in the rack. The spacing of the shelves was 0.32m (12.75") from top surface to top surface, with the lowest shelf at a height of 0.21m (8.25") above the floor. The shelves were modeled as thin rectangular blocks. Details, such as the connecting ties between the shelves and the rollers on which the racks move, were not modeled because their effect on the overall flow field and gas concentration distributions was considered insignificant.

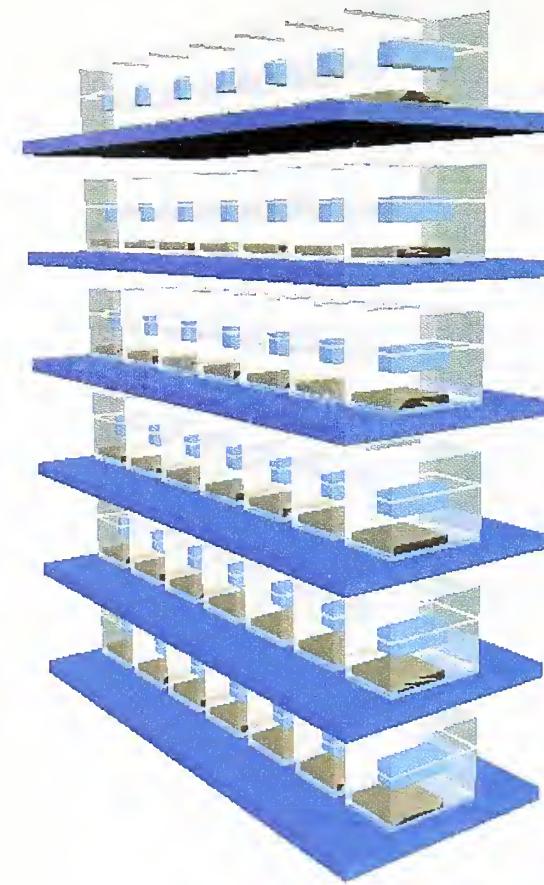


Figure 1.02 CFD Model of Cage Rack

Located on the shelves of the racks were representations of the animal cages, shown in figure 1.02. The dimensions of the cage were 0.27m (10.7") x 0.16m (6.38") x 0.21m (8.39") high, which maintained the volume of the original cage that had sloped sides. The sides of the cage were modeled as thin plates, with the thickness and conductivity of the plates set to those of the physical cage polycarbonate. The water bottle and food normally found in a cage were modeled as a single block in order to reduce the computational overhead. The volume of the block was the same as that of the bottle and food combined. The bedding of the cage was included as a rectangular block of 0.27m (10.7") x 0.16m (6.38") x 1.27e-2m (0.5").

The mice were modeled as a block of 0.11m (4.25") x 8.57e-2m (3.38") x 0.22m (0.88"), the same representation that was used in the experimental cage wind tunnel tests (see volume I, section 4.1.1). This simulated the effect of 'huddling' by the mice. The surface temperature of the block was fixed at 30.0 °C (86.0 °F), which is agreed to be a typical mouse body surface temperature.

Surrounding this block, a source of CO₂ was defined at 2.12e-7 kg/s (0.76g/hr), which was based on the generation rate indicated for the dark period in the early tests on the effect of the

photoperiod on the mice. The supply air was assumed to have a zero concentration of CO₂. This source allowed the additional concentration of CO₂ in the air to be calculated in the simulation. It also allowed the concentration of NH₃, among other things, to be calculated by scaling even though it has a different molecular weight from both air and CO₂. This was possible as the magnitude of the source was very small and the resulting concentrations were so low as to have a negligible effect on the density of the mixture of air, CO₂, and NH₃. In effect, the CO₂ and NH₃ are intimately mixed with, and flow with, the air.

Experimental data later showed the generation rate of CO₂ was actually higher than the source used in the CFD simulations at 0.90 g/hr/100g mouse body weight. This means the concentration of CO₂ in the room and cages was derived from the simulated concentration multiplied by a scaling factor (0.90/0.76). The concentrations of NH₃ in both the cages and the room were also derived by scaling the concentration with a factor specified in the post-processing of the data. This factor was assumed to vary according to the number of days that passed since the bedding in the cage was changed, along with the average relative humidity in the cages. See volume I, section 4.2.1.2 for the experimental determination of the factors.

Background levels of CO₂ and NH₃ were assumed to be zero. This means that all values quoted in the CFD section of the report are relative to the background level. If an absolute value for CO₂ is required, an additional amount in the range of 300ppm to 700ppm should be added for most locations.

The remaining cage boundary conditions are associated with the transfer mechanisms for air/gases to enter/leave the cage. The cracks at the side of the cage were modeled as 6.35e-3m (0.25") high planar resistances, with the loss coefficient for these resistances having been determined from the cage wind tunnel CFD simulations (see volume I section 4.2.1.2). The top of the cage, which was filtered, was defined as a combination of a planar resistance and a planar source. The determination of the loss coefficient for the resistance, and the coefficient for the source has been outlined (see volume I, section 4.2.1.1).

The spacing of the cages on the shelves was dependent on whether the racks were single density (7 cages per shelf), or double density (14 cages per shelf). In the single density cases, the cages were centrally located in the short dimension, and equally spaced in the long dimension. The spacing was 4.88e-2m (1.92") from corner of cage to corner of adjacent cage. In the double density racks, the cages were equally spaced in both the long and short dimensions. The spacing was 2.20e-2m (0.87") and 4.88e-2m (1.92"), respectively.

Change Station Model

Two alternative change stations were considered in this project. Both stations were constructed primarily from rectangular blocks and triangular prisms. The internal structure and flow field were of no concern in this project. It was only the effect of the station on the room airflow that is of importance.

The first design is shown in figure 1.03. The station had overall dimensions of 1.32m (52") x 0.86m (34") x 1.83m (72"). This design was effectively passive in terms of direct flow field interaction. In particular, the station internally recirculated a flow of 350 cfm (1.65e-1 m³ /s),

with only 10 percent leakage defined at the sash opening. The makeup air intake for this leakage was mounted at the side of the station. The station dissipated heat that was expected to affect the room's overall flow field. In particular, the station contributed a load of 720W to the room. This heat was mostly confined to the lower portion of the station where the motor was located.

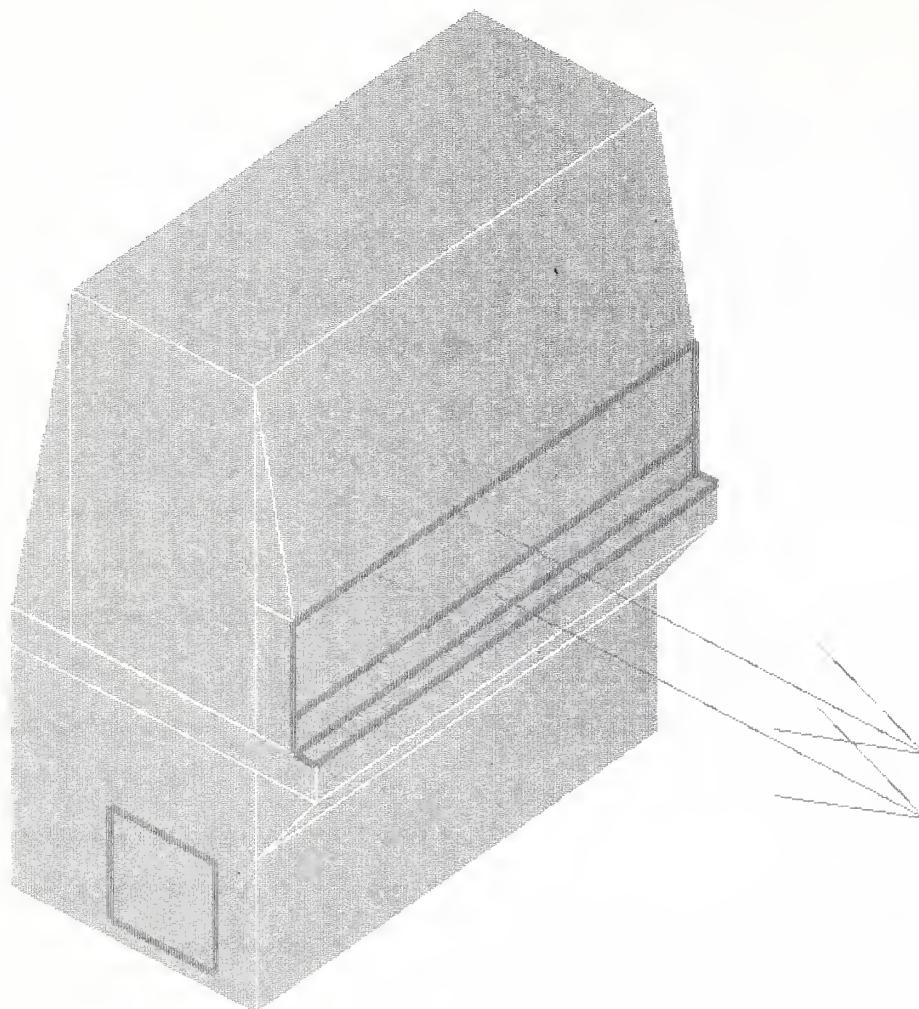


Figure 1.03 Original Change Station Design

Due to concerns raised over the relative passiveness of the first station design, a second design was considered, as is displayed in figure 1.04. The station had overall dimensions of 1.50m (59") x 0.86m (34") x 1.93m (76") high. This station also recirculated air, at 300 cfm ($1.42e-1 \text{ m}^3/\text{s}$), but discharged a much higher percentage than the first design. In particular, 200 cfm ($9.44e-2 \text{ m}^3/\text{s}$) was discharged through grilles at the top of the station. The air makeup to compensate for this discharge was mounted at the front sill at the opening to the station. The station dissipated 660W, and this heat was considered to be added to the air discharge at the top of the station.

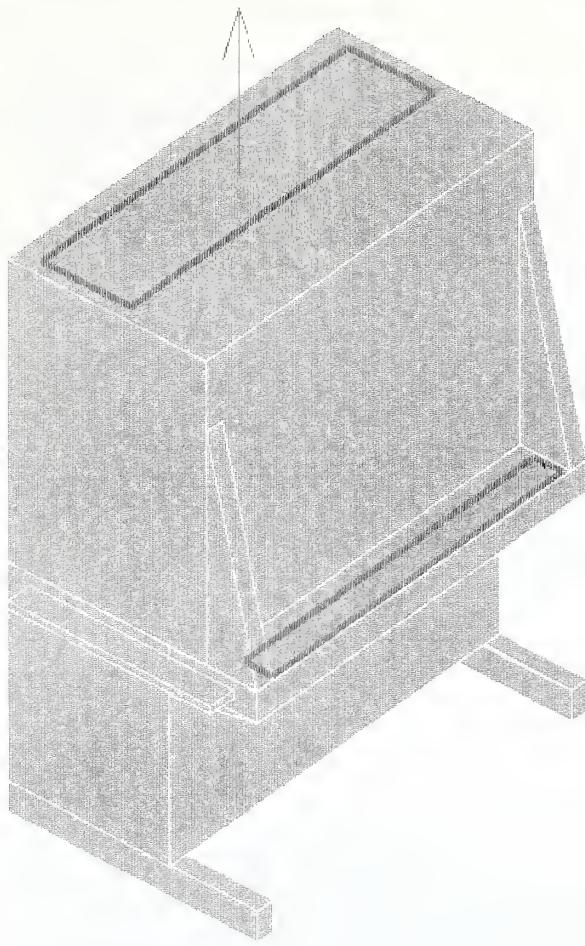


Figure 1.04 Alternative Change Station Design

Modeling Assumptions

- Solar load was not modeled through the walls of the room.
- The floor, ceiling, and walls were assumed to have no heat transfer, i.e., the surrounding areas were assumed to be at the same temperatures.
- All surfaces were treated as smooth when calculating surface friction.
- The sink in the animal room was modeled as a single rectangular block. The recess formed by the shape of the sink was not modeled because the effect of the recess would be negligible on the overall flow field within the room.
- No lighting was assumed in the animal room simulations. The reason for this was that higher CO₂ and NH₃ emissions occur during dark (scotophase) conditions (see volume I, section 4.1.2.8.1 and appendix I, sections 3.4.1.9 and 3.4.1.10).

- The animal room was intended to be kept at 22.2 °C (72.0 °F), with temperature control performed on the exhaust air temperature.
- No leakage occurred into or out of the animal room other than that specified though the cracks around the door.
- Air density variations due to temperature were negligible. Density variation was therefore ignored in all terms apart from in the momentum term for the vertical velocity component. This is known as the Boussinesq approximation.
- The levels of CO₂ and NH₃ were so diluted in the whole room simulations, even at their source, that the variation of the mixture density due to differing molecular weights was negligible.

1.2 Whole Room Configurations

To investigate a range of parameters, the basic model described in section 1.1 was modified. Wherever possible, only one parameter was varied at a time to fully assess the effect.

The list of room runs as they were considered is given in table 1.01. Parameters considered in this report are as follows:

- *Supply Diffuser Type*: Three different diffuser types were considered in this project: radial diffusers, low induction diffusers, and slot diffusers. While all these diffuser types are ceiling mounted diffusers, the flow patterns resulting from them are fundamentally different. See volume I, section 4.2.2 and figures 1.05 to 1.07).

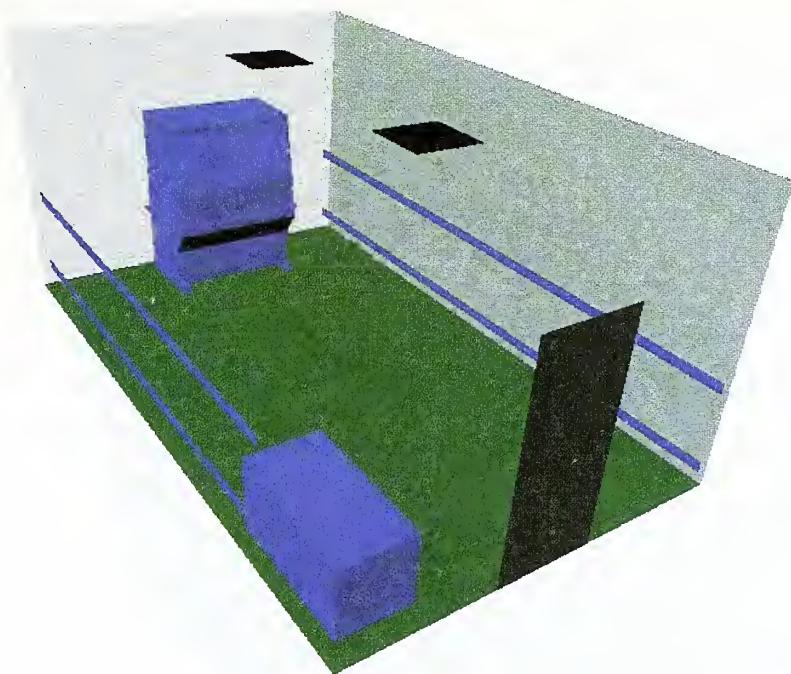


Figure 1.05 Radial Diffuser

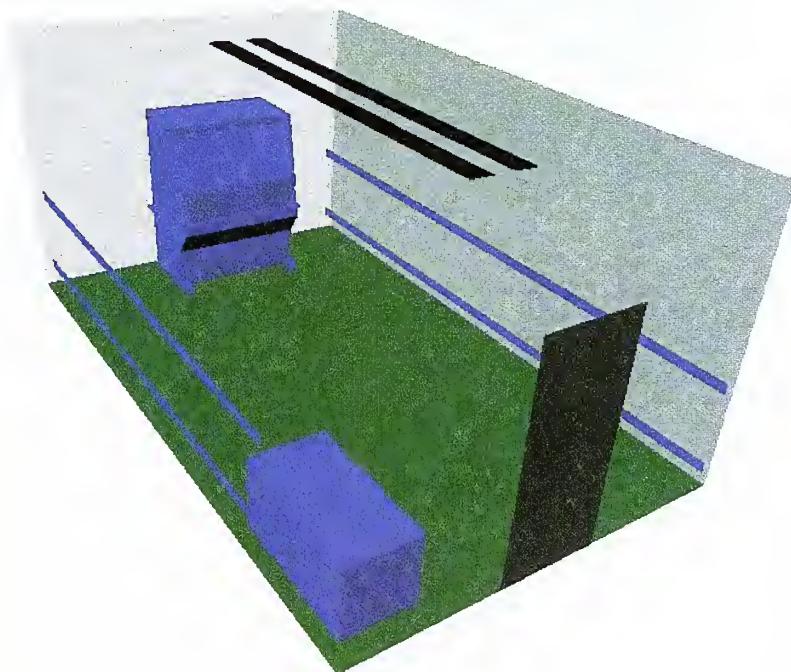


Figure 1.06 Slot Diffuser

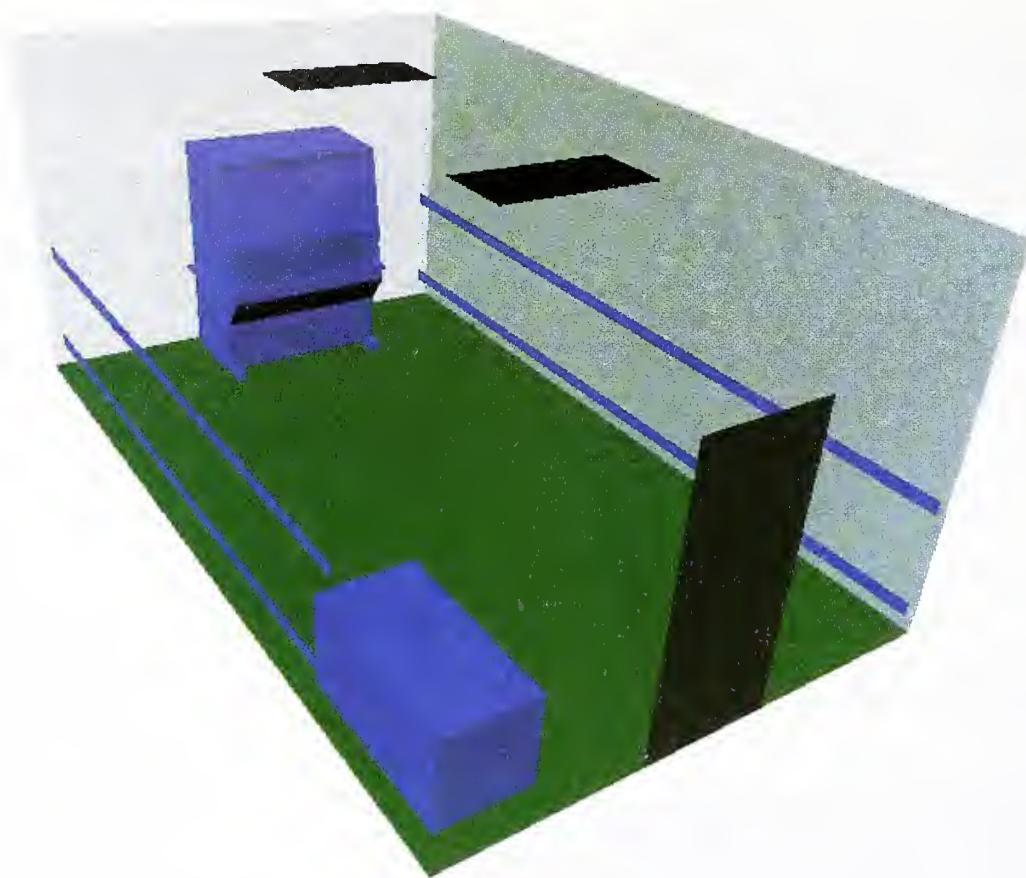


Figure 1.07 Low Induction Diffuser

- *Exhaust Location and Number:* Four different exhaust locations were considered: ceiling; high level, low level on the long walls, and low level on the door wall. The number of exhausts used in each of these locations was also considered as a parameter. See figures 1.08 to 1.11.

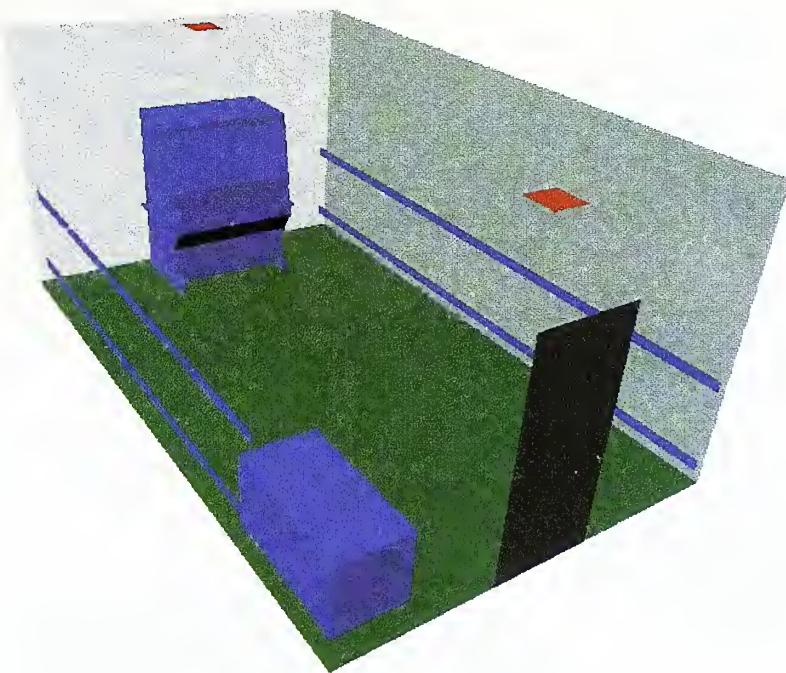


Figure 1.08 Ceiling Level Exhausts

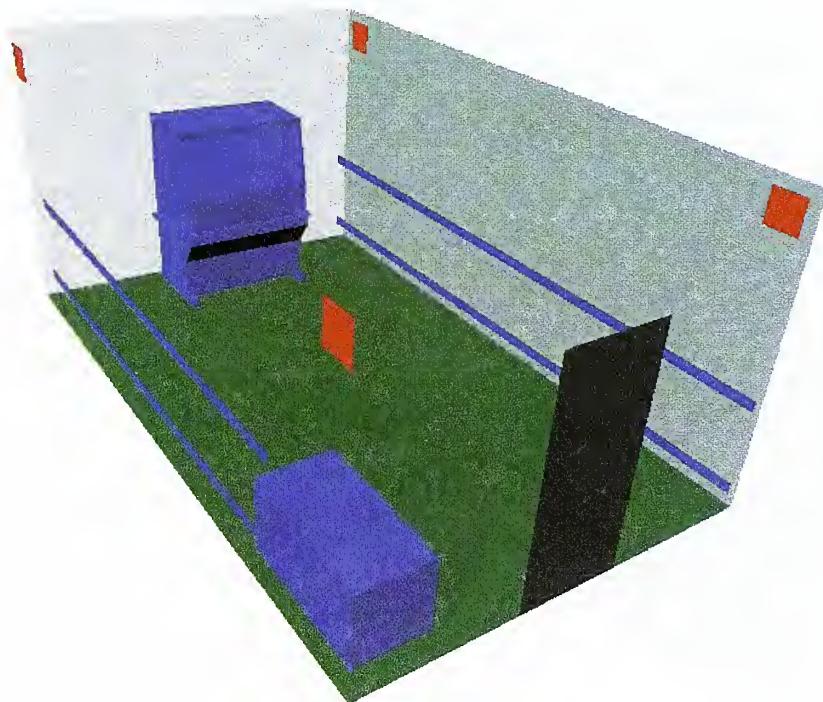


Figure 1.09 High Level Exhausts

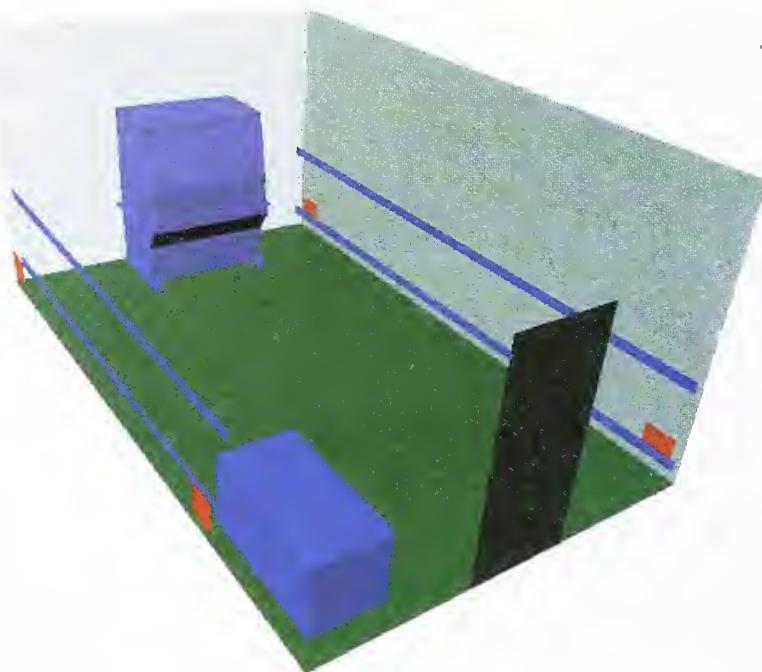


Figure 1.10 Low Level Exhausts

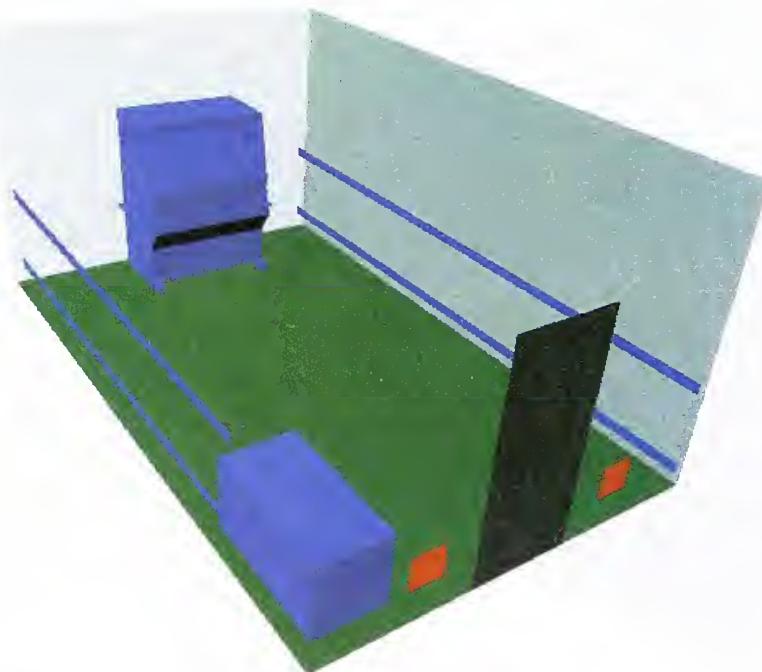


Figure 1.11 Low Level Exhausts on the Door Wall

- *Room Air Change Rate:* In addition to the basecase ACH of 15, the following three other ACH values were considered: 5, 10, and 20 ACH.

- *Change Station Design and Status:* Two different change station designs were considered, as outlined above. The two designs were intended to present both a passive and intrusive influence on the room volume. In the case of the former design, the station was also considered switched off.
- *Pressurization of Room Relative to Corridor:* The pressurization of a room is dependent on the difference between the supply and exhaust flow rates. A higher exhaust rate than supply leads to negative pressurization of the room; hence, makeup air is supplied to the room via available transfer mechanisms, namely door cracks. In this project, the amount of makeup air allowed through the door cracks was varied between 100 cfm ($4.72\text{e-}1 \text{ m}^3/\text{s}$) into the room to 100 cfm ($4.72\text{e-}1 \text{ m}^3/\text{s}$) out of the room.
- *Orientation of Cage Racks in Room:* The racks were considered both parallel to the long walls, and perpendicular to them. See figures 1.12 and 1.13

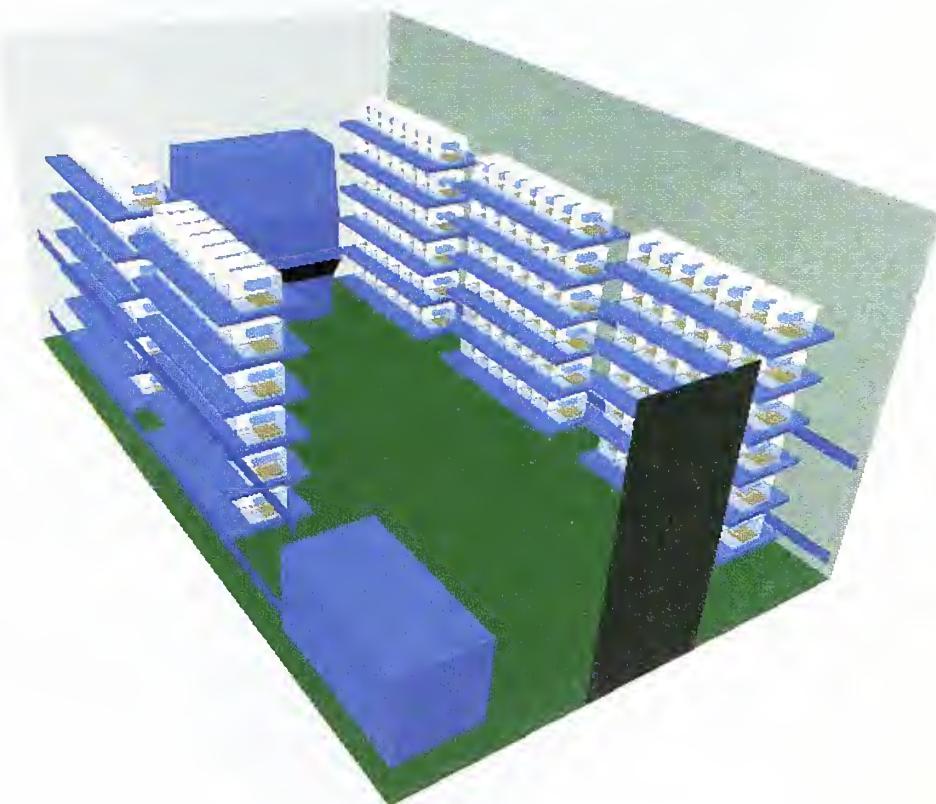


Figure 1.12 Racks Parallel to Side Walls

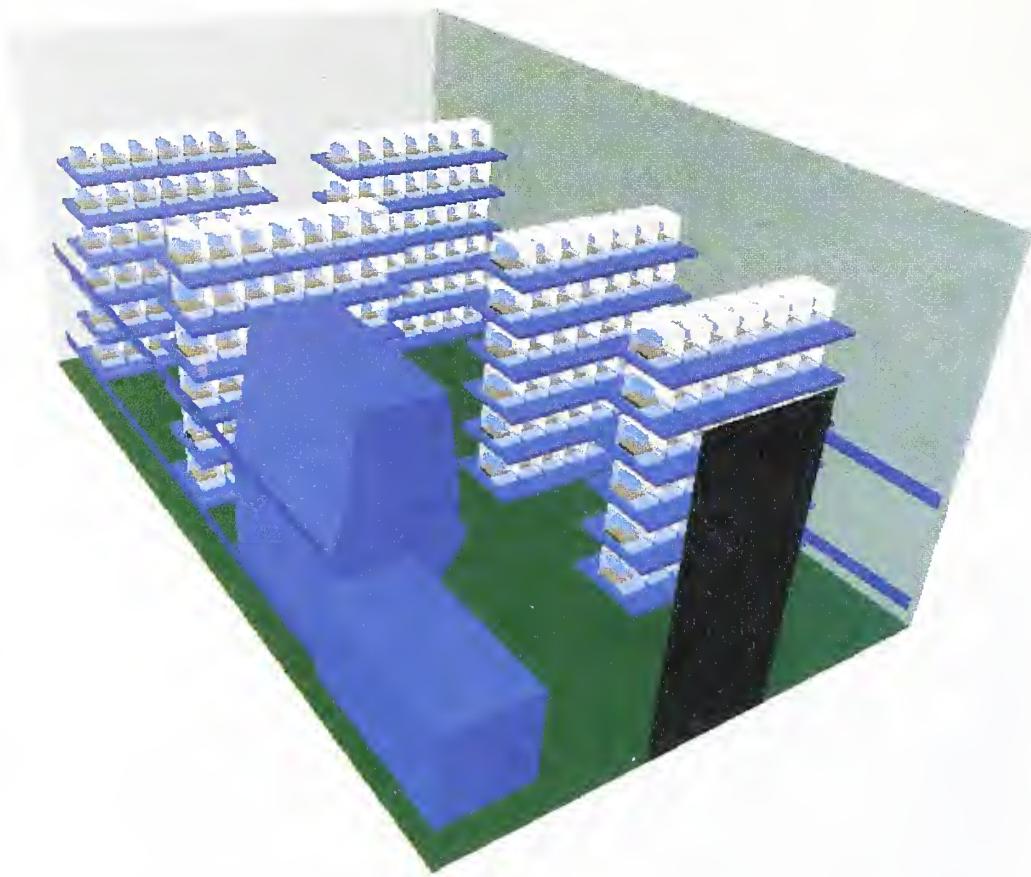


Figure 1.13 Racks Perpendicular to Side Walls

- *Side Cracks of Cage Sealed Instead of Open:* A series of cases was considered in which the side cracks of the cage were sealed, leaving the cage filter top as the only transfer mechanism. The main objective was to establish the relative increase in cage NH₃ and CO₂ levels when the secondary transfer mechanism was removed.
- *Density of Cages:* The number of cages per rack was considered as a parameter. In addition to the basecase value of 42 cages per rack, a double density 84 cages per rack was also considered, as was a reduced density of 28 cages per rack. See figures 1.14 and 1.15.



Figure 1.14 Double Density Rack

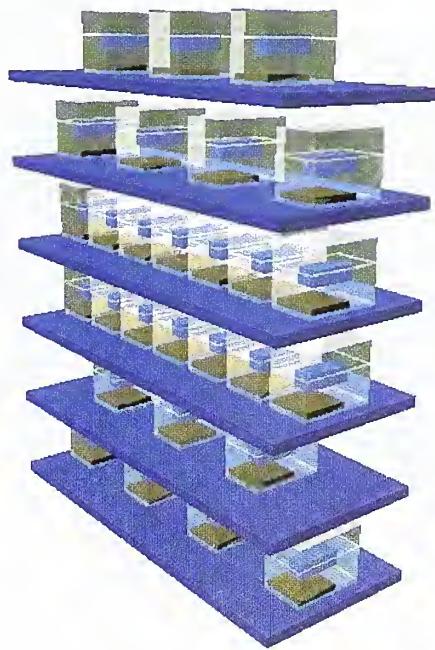


Figure 1.15 Reduced Density Rack

- *Location of Change Station:* The location of the change station was swapped with each of the racks in the room. See figures 1.16 to 1.20.

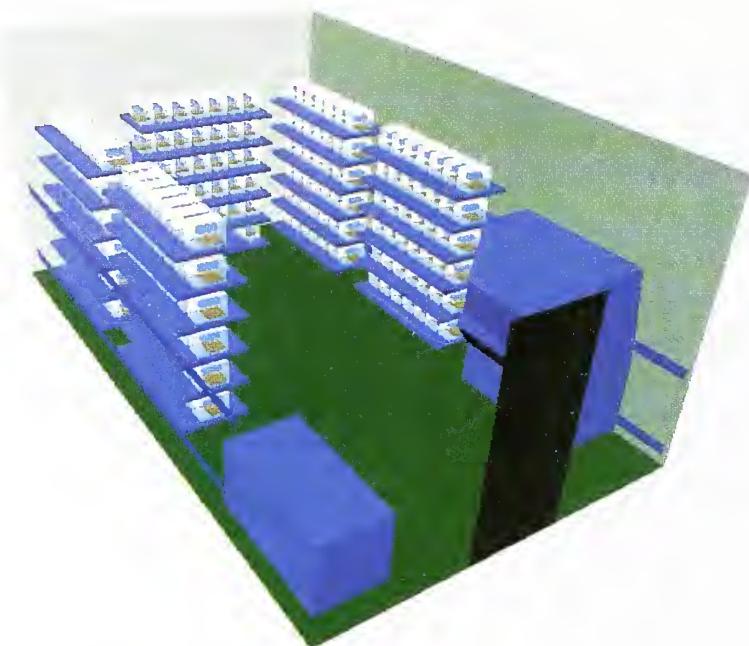


Figure 1.16 Change Station Swapped with Rack 1

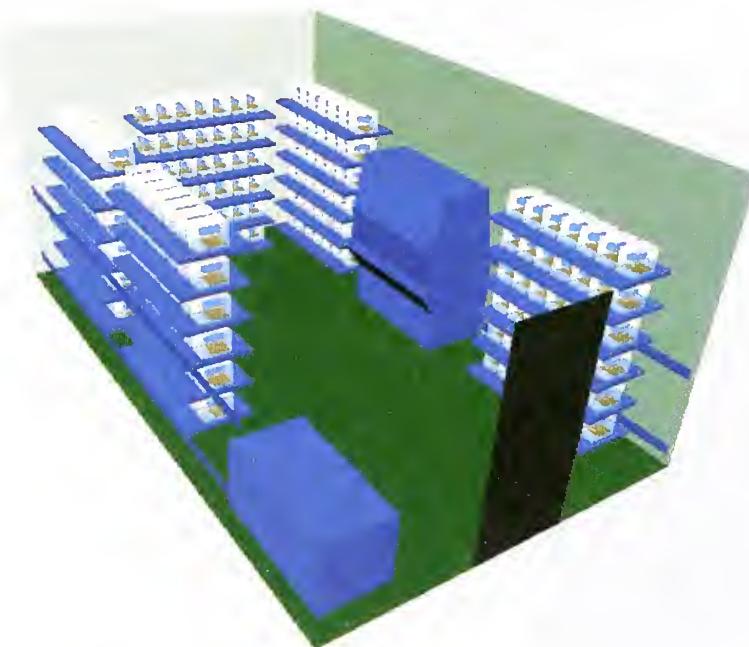


Figure 1.17 Change Station Swapped with Rack 2



Figure 1.18 Change Station Swapped with Rack 3

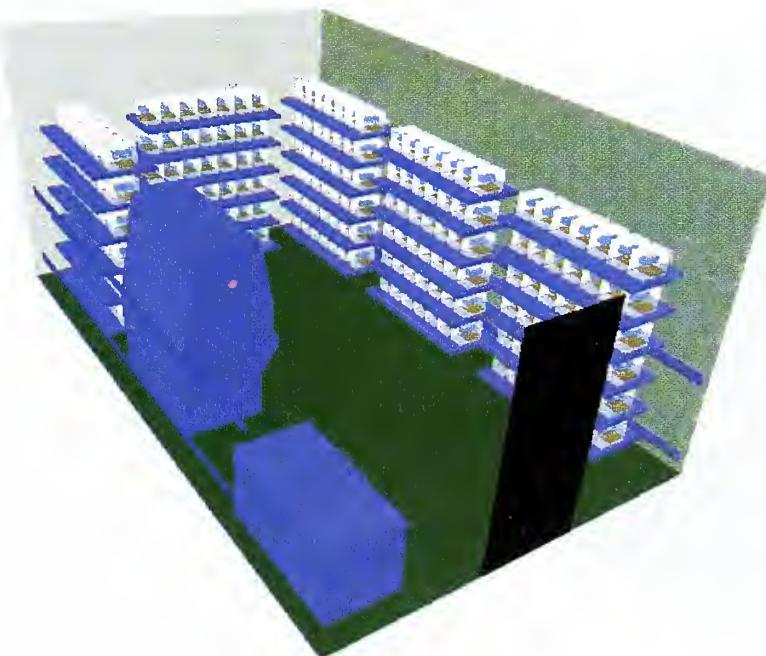


Figure 1.19 Change Station Swapped with Rack 4

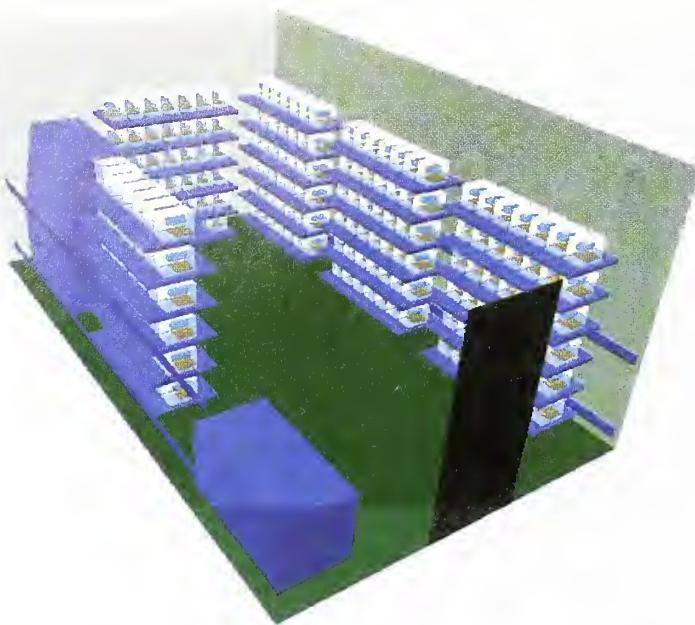


Figure 1.20 Change Station swapped with Rack 5

- **Rack Grouping:** In some series, the racks were considered to be along one wall only, rather than spread out through the room. See figure 1.21.

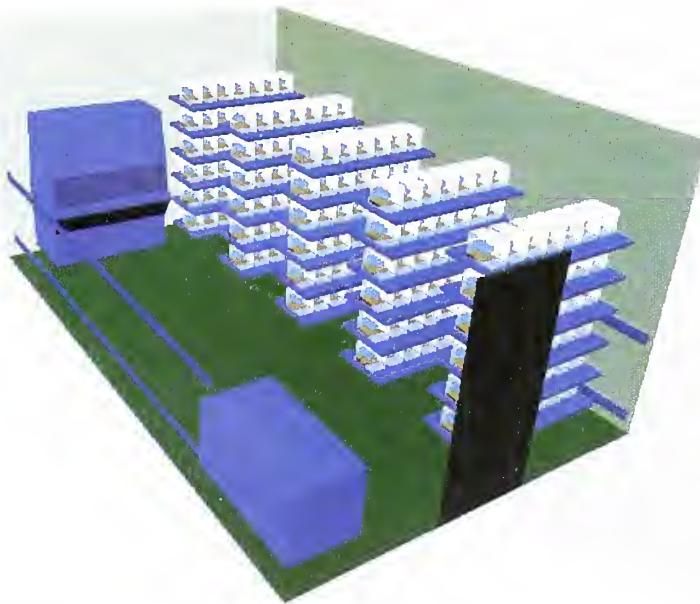


Figure 1.21 Racks on One Wall Only

- **Room Width:** Three runs were performed with the room width increased to 4.26m (14' 0").

- *Supply Air Temperature:* In a few runs the supply air temperature was raised to 22.2 °C (72.0 °F), at 49 percent RH which would cause the room and exhaust temperatures to be higher than the design value of the baseline case.

Table 1.01 List of All Whole Room Runs

Case Name	Supply Diffuser Type	Exhaust Location and Number	Change Station (Design/ Status)	Rack orientation	Rack density	Pressure of Room to Corridor	Supply Temperature °C (°F)	Supply ACH
Basecase	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 02	Radial	High (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 03	Radial	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 04	Slot	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 05	Slot	High (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 06	Slot	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 07	Low Ind	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 08	Low Ind	High (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 09	Low Ind	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 10	Radial	Ceiling (x2)	Thoren/ OFF	Parallel	Single	Neg. 100cfm	20.7 (69.3)	15
Case 11	Radial	Low (x4)	Thoren/ OFF	Parallel	Single	Neg. 100cfm	20.7 (69.3)	15
Case 12	Slot	Ceiling (x2)	Thoren/ OFF	Parallel	Single	Neg. 100cfm	20.7 (69.3)	15
Case 13	Slot	Low (x4)	Thoren/ OFF	Parallel	Single	Neg. 100cfm	20.7 (69.3)	15
Case 14	Low Ind	Ceiling (x2)	Thoren/ OFF	Parallel	Single	Neg. 100cfm	20.7 (69.3)	15
Case 15	Low Ind	Low (x4)	Thoren/ OFF	Parallel	Single	Neg. 100cfm	20.7 (69.3)	15
Case 16	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Pos. 100cfm	18.8 (65.8)	15
Case 17	Slot	Ceiling (x2)	Thoren/ ON	Parallel	Single	Pos. 100cfm	18.8 (65.8)	15
Case 18	Low Ind	Ceiling (x2)	Thoren/ ON	Parallel	Single	Pos. 100cfm	18.8 (65.8)	15
Case 19	Radial	Ceiling (x2)	Thoren/ ON	Perpendicular	Single	Neg. 100cfm	18.8 (65.8)	15
Case 20	Slot	Ceiling (x2)	Thoren/ ON	Perpendicular	Single	Neg. 100cfm	18.8 (65.8)	15
Case 21	Low Ind	Ceiling (x2)	Thoren/ ON	Perpendicular	Single	Neg. 100cfm	18.8 (65.8)	15
Case 22	Radial	Low (x4)	Thoren/ ON	Perpendicular	Single	Neg. 100cfm	18.8 (65.8)	15
Case 23	Slot	Low (x4)	Thoren/ ON	Perpendicular	Single	Neg. 100cfm	18.8 (65.8)	15
Case 24	Low Ind	Low (x4)	Thoren/ ON	Perpendicular	Single	Neg. 100cfm	18.8 (65.8)	15
Case 25 *	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 26 *	Slot	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 27 *	Low Ind	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 28	Low Ind	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	16.8 (62.2)	10
Case 29	Low Ind	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	11.0 (51.8)	5
Case 30	Low Ind	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	19.8 (67.6)	20
Case 31	Radial	Low (x4)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 32	Slot	Low (x4)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 33	Low Ind	Low (x4)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 34	Radial	Ceiling (x2)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 35	Slot	Ceiling (x2)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 36	Low Ind	Ceiling (x2)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 37	Radial	Ceiling (x1) / Low (x4) (Mass flow in 50/50 split)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 38	Slot	Ceiling (x1) / Low (x4) (Mass flow in 50/50 split)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 39	Low Ind	Ceiling (x1) / Low (x4) (Mass flow in 50/50 split)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 40	Radial	Ceiling (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 41	Slot	Ceiling (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 42	Low Ind	Ceiling (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15

Case Name	Supply Diffuser Type	Exhaust Location and Number	Change Station (Design/ Status)	Rack orientation	Rack density	Pressure of Room to Corridor	Supply Temperature °C (°F)	Supply ACH
Case 43	Low Ind (rotated by 90°)	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 44	Radial (rotated by 90°)	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 45	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 50cfm	18.8 (65.8)	15
Case 46	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neutral	18.8 (65.8)	15
Case 47	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Pos. 50cfm	18.8 (65.8)	15
Case 48	Radial	Ceiling (x2)	Thoren/ ON (swapped with rack1)	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 49	Radial	Ceiling (x2)	Thoren/ ON (swapped with rack2)	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 50	Radial	Ceiling (x2)	Thoren/ ON (swapped with rack3)	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 51	Radial	Ceiling (x2)	Thoren/ ON (swapped with rack4)	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 52	Radial	Ceiling (x2)	Thoren/ ON (swapped with rack5)	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 53	Radial	Ceiling (x2)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 54	Slot	Ceiling (x2)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 55	Low Ind	Ceiling (x2)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 56	Radial	High (x4)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 57	Radial	Low (x4)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 58	Slot	High (x4)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 59	Slot	Low (x4)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 60	Low Ind	High (x4)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 61	Low Ind	Low (x4)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 62	Low Ind	Low (x4)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	6.6 (43.9)	5
Case 63	Low Ind	Low (x4)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	14.8 (58.6)	10
Case 64	Low Ind	Low (x4)	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	18.9 (66.0)	20
Case 65	Low Ind	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 66	Low Ind	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	6.6 (43.9)	5
Case 67	Low Ind	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	14.8 (58.6)	10
Case 68	Low Ind	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	18.9 (66.0)	20
Case 69	Radial	High (x4) / Low (x4) (Mass flow split evenly amongst exhausts)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15

Case Name	Supply Diffuser Type	Exhaust Location and Number	Change Station (Design/ Status)	Rack orientation	Rack density	Pressure of Room to Corridor	Supply Temperature °C (°F)	Supply ACH
Case 70	Slot	High (x4) / Low (x4) (Mass flow split evenly amongst exhausts)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 71	Low Ind	High (x4) / Low (x4) (Mass flow split evenly amongst exhausts)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 72	Radial	High (x4) / Low (x2) (Mass flow split evenly amongst exhausts)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 73	Slot	High (x4) / Low (x2) (Mass flow split evenly amongst exhausts)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 74	Low Ind	High (x4) / Low (x2) (Mass flow split evenly amongst exhausts)	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 75	Radial	Ceiling (x1) / Low (x4) (Mass flow in 50/50 split)	Lab. Prod. / ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 76 **	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	19.2 (66.6)	15
Case 77 **	Slot	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	19.2 (66.5)	15
Case 78 **	Low Ind	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	19.2 (66.6)	15
Case 79	Radial	2 Door exhausts	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 80	Slot	2 Door exhausts	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 81	Low Ind	2 Door exhausts	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 82	Radial	2 Door exhausts	Thoren/ ON	Parallel	Single	Neg. 100cfm	18.8 (65.8)	15
Case 83	Slot	2 Door exhausts	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 84	Low Ind	2 Door exhausts	Thoren/ ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 85	Radial	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 86	Slot	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	17.5 (63.5)	15
Case 88	Radial	Low (x4)	Thoren/ ON	Parallel	Reduced	Neg. 100cfm	19.2 (66.6)	15
Case 88	Slot	Low (x4)	Thoren/ ON	Parallel	Reduced	Neg. 100cfm	19.2 (66.6)	15
Case 89	Low Ind	Low (x4)	Thoren/ ON	Parallel	Reduced	Neg. 100cfm	19.2 (66.6)	15
Case 90	Radial	Ceiling (x2)	Thoren/ ON	Perpendicular all 5 on 1 wall	Single	Neg. 100cfm	18.8 (65.8)	15
Case 91	Slot	Ceiling (x2)	Thoren/ ON	Perpendicular all 5 on 1 wall	Single	Neg. 100cfm	18.8 (65.8)	15
Case 92	Low Ind	Ceiling (x2)	Thoren/ ON	Perpendicular all 5 on 1 wall	Single	Neg. 100cfm	18.8 (65.8)	15

Case Name	Supply Diffuser Type	Exhaust Location and Number	Change Station (Design/ Status)	Rack orientation	Rack density	Pressure of Room to Corridor	Supply Temperature °C (°F)	Supply ACH
Case 93	Radial	Ceiling (x2)	Thoren/ ON	Perpendicular all 5 on 1 wall	Double	Neg. 100cfm	17.5 (63.5)	15
Case 94	Slot	Ceiling (x2)	Thoren/ ON	Perpendicular all 5 on 1 wall	Double	Neg. 100cfm	17.5 (63.5)	15
Case 95	Low Ind	Ceiling (x2)	Thoren/ ON	Perpendicular all 5 on 1 wall	Double	Neg. 100cfm	17.5 (63.5)	15
Case 96	Radial	Ceiling (x2)	Lab. Prod. / ON	Perpendicular all 5 on 1 wall	Double	Neg. 100cfm	17.5 (63.5)	15
Case 97	Slot	Ceiling (x2)	Lab. Prod. / ON	Perpendicular all 5 on 1 wall	Double	Neg. 100cfm	17.5 (63.5)	15
Case 98	Low Ind	Ceiling (x2)	Lab. Prod. / ON	Perpendicular all 5 on 1 wall	Double	Neg. 100cfm	17.5 (63.5)	15
Case 99 ***	Radial	Ceiling (x2)	Thoren/ ON	Parallel	Single	Neg. 100cfm	22.2 (72.0)	15
Case 100 ***	Radial	Low (x4)	Thoren/ ON	Parallel	Single	Neg. 100cfm	22.2 (72.0)	15
Case 101 ***	Low Ind	Low (x4)	Lab. Prod. / ON	Perpendicular	Double	Neg. 100cfm	22.2 (72.0)	5

* Sealed cages instead of open cages

** Room 4.26m (14' 0") wide instead of 3.66m (12' 0")

*** Supply air temperature fixed at 22.2 °C (72.0 °F). In all other cases, the exhaust temperature was set to be 22.2 °C (72.0 °F) by setting the supply air temperature appropriately.

Table 1.02 Cases Cross-Referenced Against Supply Diffuser Type

Supply Diffuser Type	Case Number
Radial	Basecase, 02-03, 10-11, 16, 19, 22, 25, 31, 34, 37, 40, 44*, 45-53, 56-57, 69, 72, 75-76, 79, 82, 85, 87, 90, 93, 96, 99-100
Slot	04-06, 12-13, 17, 20, 23, 26, 32, 35, 38, 41, 54, 58-59, 70, 73, 77, 80, 83, 86, 88, 91, 94, 97
Low Induction	07-09, 14-15, 18, 21, 24, 27-30, 33, 36, 39, 42, 43*, 55, 60-68, 71, 74, 78, 81, 84, 89, 92, 95, 98, 101

* Indicates that diffuser rotated by 90°

Table 1.03 Cases Cross-Referenced Against Exhaust Location and Number

Exhaust Location and Number	Case Number
Ceiling (x2)	Basecase, 04, 07, 10, 12, 14, 16-21, 25-27, 34-36, 43-55, 76-78, 90-99
High (x4)	02, 05, 08, 56, 58, 60
Low (x4)	03, 06, 09, 11, 13, 15, 22-24, 28-33, 57, 59, 61-68, 85-89, 100-101
Ceiling (x1) / Low (x4) (Mass flow in 50/50 split)	37-39, 75
Ceiling (x4)	40-42
High (x4)/ Low (x4) (Mass flow split evenly amongst exhausts)	69-71
High (x4)/ Low (x2) (Mass flow split evenly amongst exhausts)	72-74
2 Door Exhausts	79-84

Table 1.04 Cases Cross-Referenced Against Change Station Design and Status

Change Station	Case Number
ON*	Basecase – 09, 16-101
OFF*	10-15
Thoren Design	Basecase – 52**, 62-64, 69-74, 76-84, 87-95, 99-100
Laboratory Products Design	53-61, 65-68, 75, 85-86, 96-98, 101

*Change in status was only considered for Thoren design change station.

**Cases 10 to 15 had Thoren design change station switched off.

Table 1.05 Cases Cross-Referenced Against Pressurization of Room Relative to Corridor

Pressurization of Room to Corridor	Case Number
Neg. 100 cfm	basecase – 15, 19-44, 48-101
Pos. 100 cfm	16-18
Neg. 50cfm	45
Neutral	46
Pos. 50 cfm	47

Table 1.06 Cases Cross-Referenced Against Pressurization of Room Relative to Corridor

Rack Orientation	Case Number
Parallel	basecase – 18, 25-30, 37-61***, 69-82, 87-89, 99-100
Perpendicular	19-24, 31-36, 62-68, 83-86, 101
Perpendicular All 5 on 1 Wall	90-98

*** Cases 48 to 52 had change station swapped with each of five racks.

Table 1.07 Cases Cross-Referenced Against Status of Cage Side Cracks

Status of Cage Side Cracks	Case Number
Open	basecase – 24, 28-101
Sealed	25-27

Table 1.08 Cases Cross-Referenced Against Density of Cages in Rack

Density of Cages in Rack	Case Number
Single	basecase – 30, 37-61, 69-82, 90-92, 99-100
Double	31-36, 62-68, 83-86, 93-98, 101
Reduced	87-89

Table 1.09 Cases Cross-Referenced Against Room Air Change Rate

Room Air Change Rate (ACH)	Case Number
5	29, 62, 66, 101
10	28, 63, 67
15	basecase – 27, 31-61, 65, 69-100
20	30, 64, 68

Table 1.10 Cases Cross-referenced Against Room Width

Room Width (ft)	Case Number
12	basecase -75, 79-101
14	76-78

Table 1.11 Cases Cross-Referenced Against Supply Temperature (1)

Supply Temperature	Case Number
Supply Temperature set such that air is at 22.22°C (72°F) at Exhaust	basecase – 98
22.22°C	99-101

Table 1.12 Cases Cross-Referenced Against Supply Temperature (2)

Supply Temperature	Case Number
6.60	62, 66
11.00	29
14.80	63, 67
16.80	28
17.50	31-36, 65, 83-86, 93-98
18.80	basecase – 09, 16-27, 37-61, 69-75, 79-82, 90-92
18.90	64, 68
19.20	76-78, 87-89
19.80	30
20.70	10-15
22.22****	99-101

**** In these cases, the supply air temperature was set to 22.22 °C (72 °F). In all other cases, the exhaust air temperature was set to be 22.22 °C (72 °F) by setting the supply air temperature appropriately.

2. SUMMARY OF RESULTS OF WHOLE ROOM RUNS

Discussion of these figures and tables can be found in volume I, section 3.1.

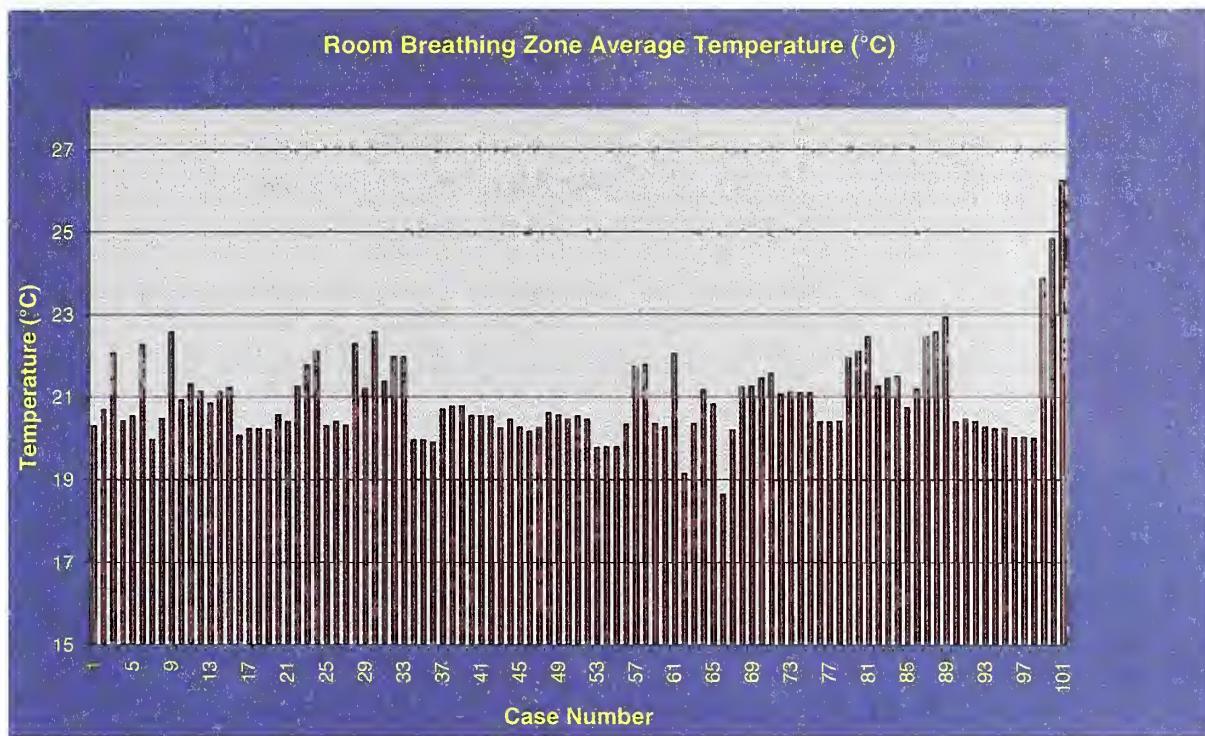


Figure 2.01 Mean Room Breathing Zone Temperature

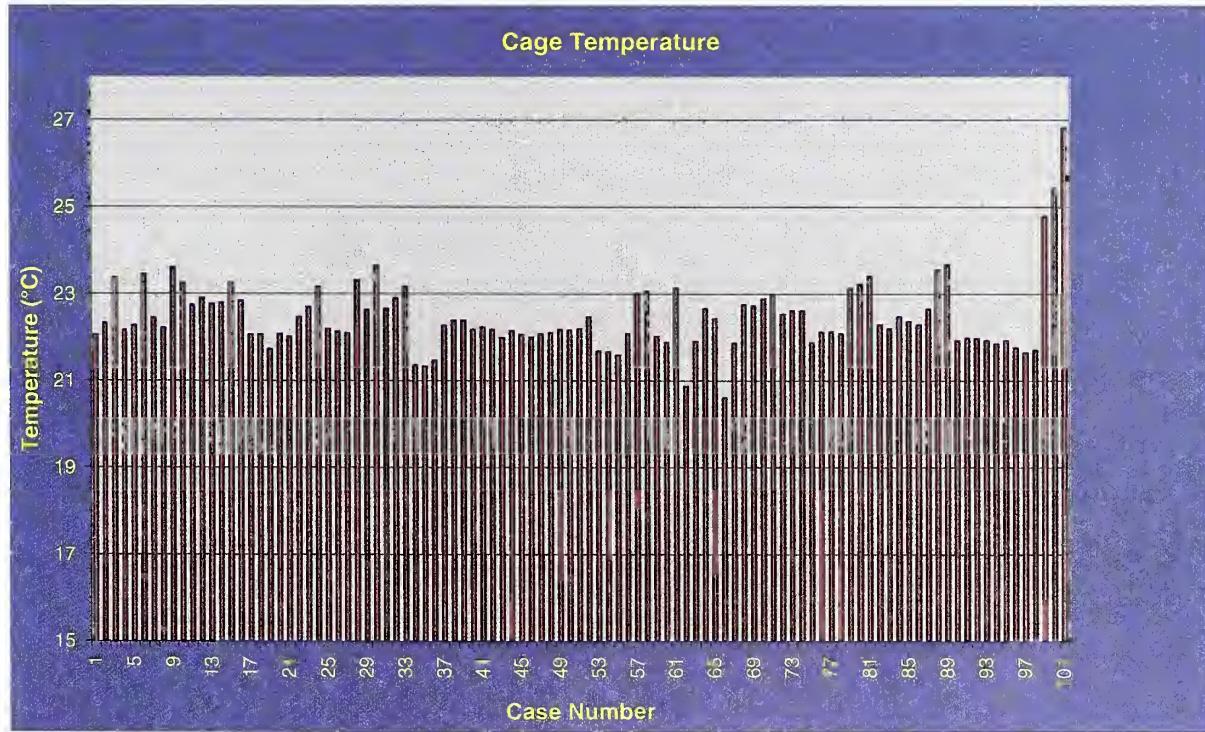


Figure 2.02 Mean Cage Temperatures

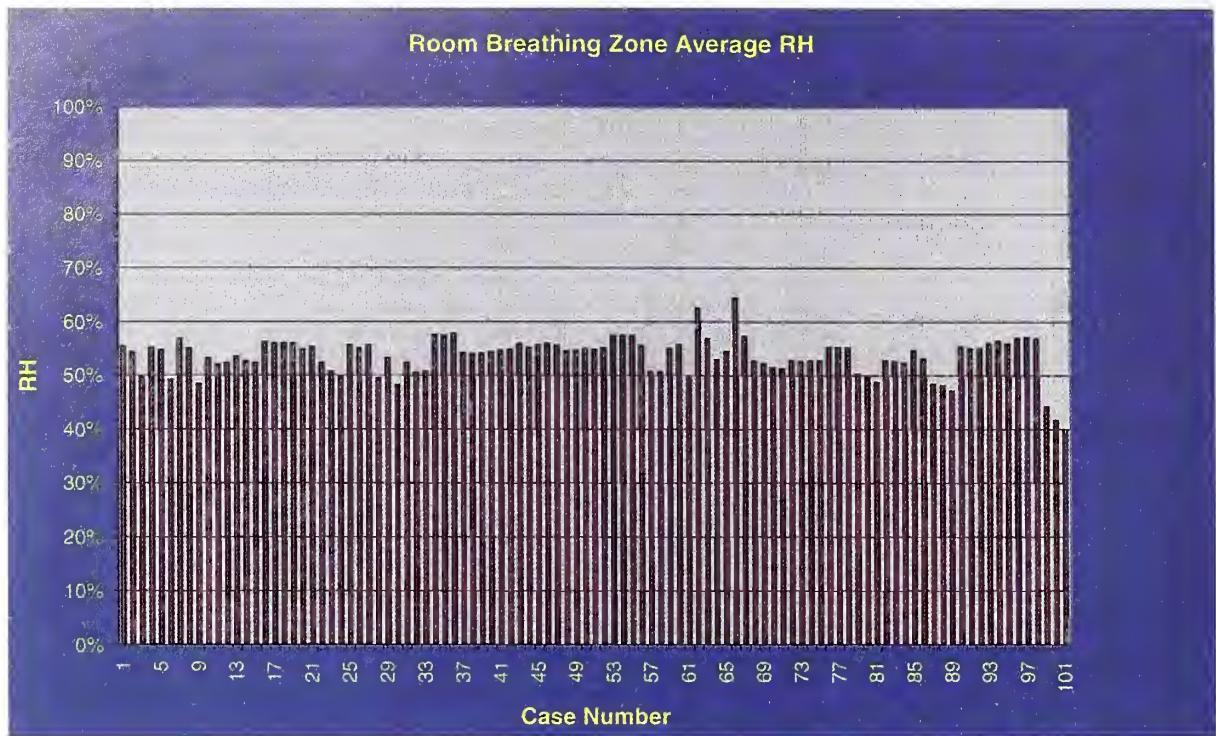


Figure 2.03 Mean Room Breathing Zone Relative Humidity (RH)

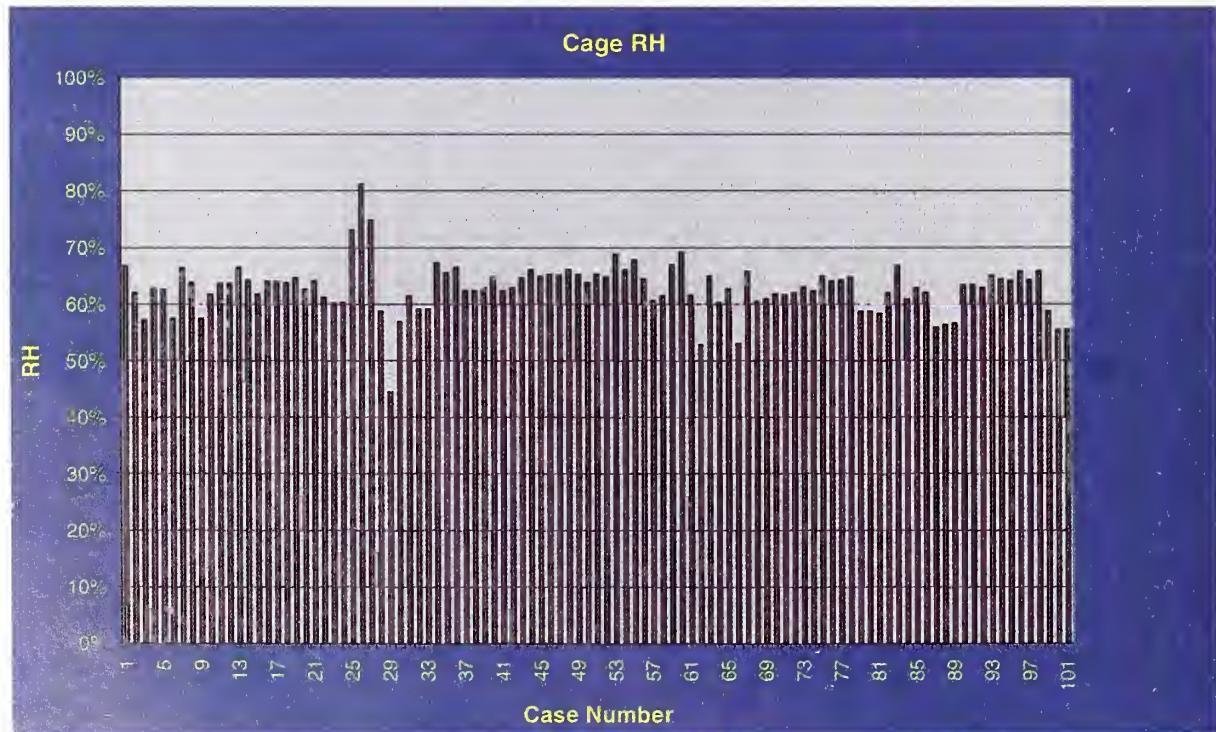


Figure 2.04 Mean Cage Relative Humidity (RH)

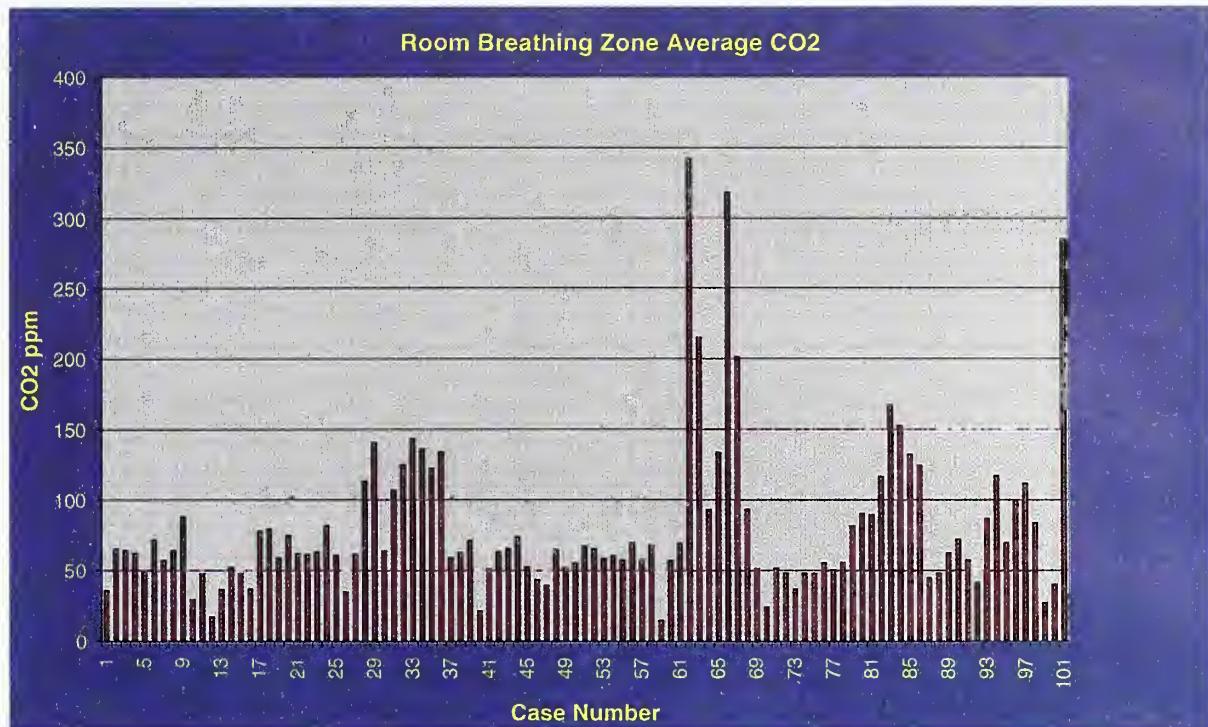


Figure 2.05 Mean Room Breathing Zone CO₂ Concentration

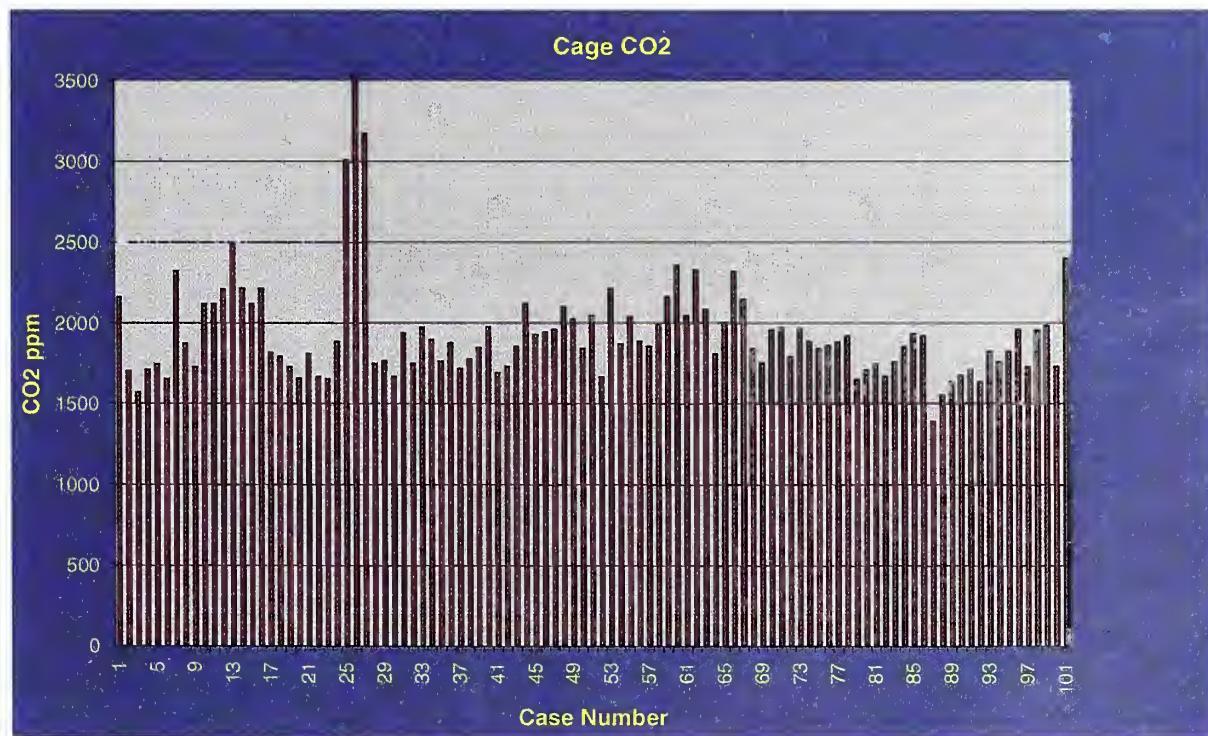


Figure 2.06 Mean Cage CO₂ Concentrations

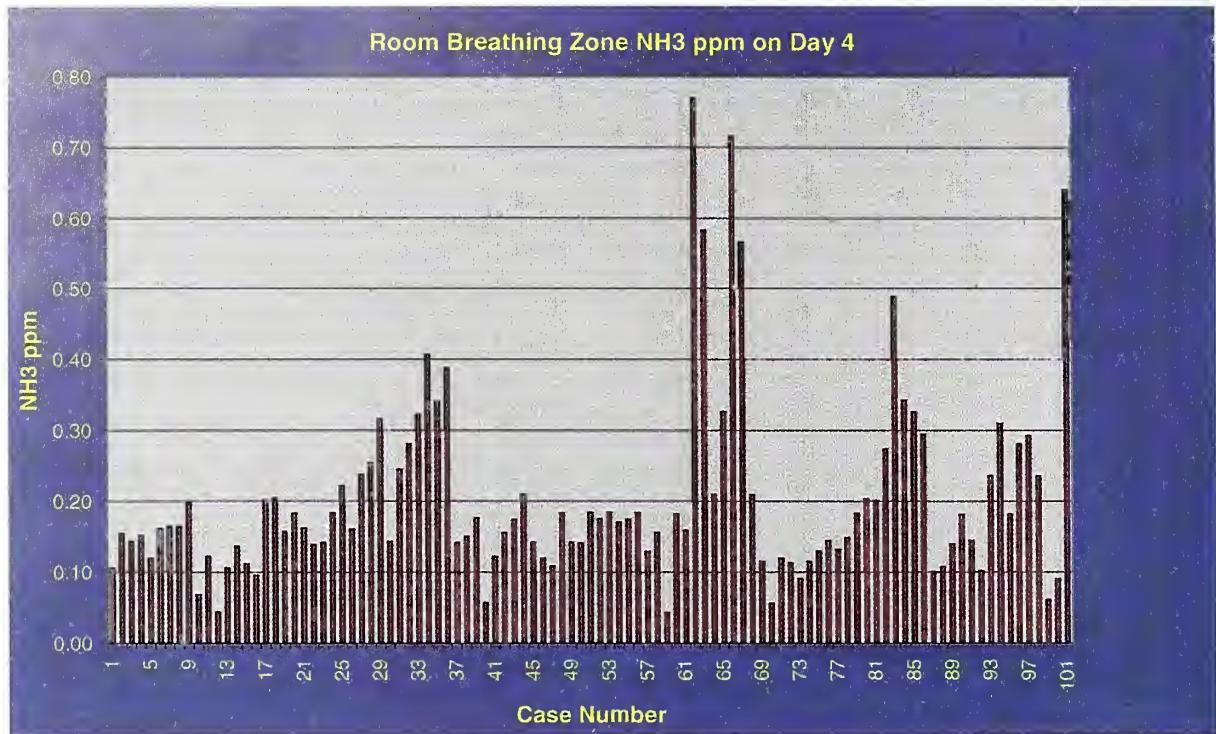


Figure 2.07 Mean Room Breathing Zone NH₃ Concentration on Day 4

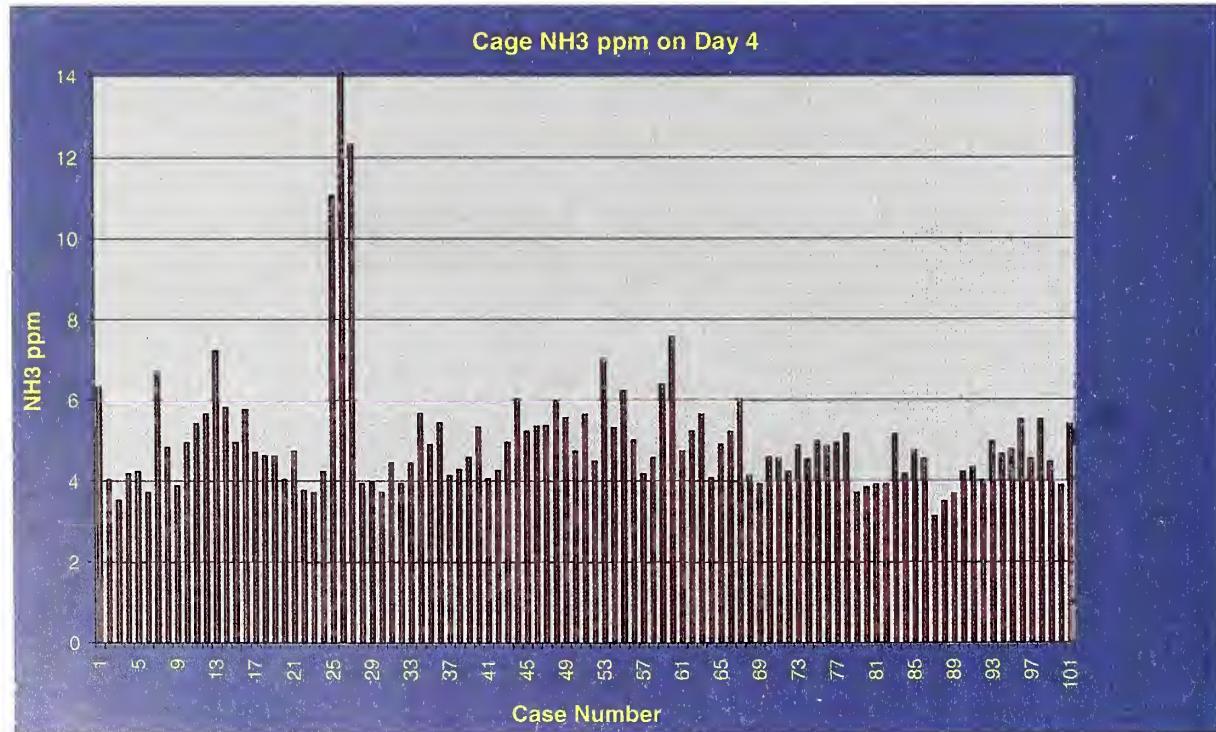


Figure 2.08 Mean Cage NH₃ Concentration on Day 4

Case Name	Day by day room breathing zone average NH ₃										Day by day room breathing zone maximum NH ₃									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Basecase	0.02	0.04	0.06	0.11	0.18	0.28	0.40	0.49	0.59	0.63	0.07	0.14	0.21	0.40	0.68	1.01	1.51	1.88	2.25	2.43
Case 02	0.03	0.07	0.10	0.15	0.23	0.32	0.45	0.59	0.78	0.95	0.08	0.18	0.28	0.43	0.63	0.88	1.24	1.64	2.12	2.65
Case 03	0.03	0.08	0.10	0.14	0.20	0.28	0.38	0.52	0.69	0.90	0.08	0.17	0.27	0.38	0.54	0.75	1.02	1.38	1.83	2.39
Case 04	0.03	0.06	0.10	0.15	0.23	0.32	0.48	0.60	0.77	0.94	0.09	0.17	0.26	0.42	0.62	0.89	1.27	1.65	2.10	2.56
Case 05	0.03	0.05	0.08	0.12	0.18	0.25	0.38	0.47	0.60	0.74	0.08	0.16	0.24	0.37	0.58	0.79	1.12	1.47	1.88	2.30
Case 06	0.04	0.07	0.11	0.18	0.23	0.31	0.43	0.58	0.77	1.01	0.08	0.18	0.25	0.35	0.50	0.63	0.94	1.27	1.69	2.21
Case 07	0.03	0.06	0.08	0.18	0.27	0.41	0.61	0.76	0.91	0.99	0.20	0.38	0.58	1.07	1.79	2.65	3.97	4.94	5.94	6.46
Case 08	0.03	0.06	0.10	0.16	0.28	0.37	0.54	0.69	0.86	1.01	0.12	0.23	0.35	0.58	0.91	1.31	1.80	2.43	3.04	3.56
Case 09	0.05	0.08	0.14	0.20	0.28	0.38	0.53	0.71	0.94	1.23	0.08	0.18	0.25	0.37	0.53	0.75	1.05	1.39	1.81	2.29
Case 10	0.02	0.03	0.05	0.07	0.10	0.14	0.18	0.28	0.33	0.42	0.12	0.23	0.35	0.57	0.88	1.27	1.64	2.36	2.96	3.49
Case 11	0.03	0.05	0.07	0.12	0.18	0.27	0.39	0.51	0.63	0.75	0.12	0.23	0.38	0.59	0.92	1.32	1.82	2.46	3.08	3.63
Case 12	0.01	0.02	0.03	0.04	0.07	0.10	0.14	0.18	0.23	0.27	0.15	0.28	0.44	0.61	1.36	2.01	3.02	3.75	4.51	4.90
Case 13	0.02	0.04	0.06	0.11	0.18	0.28	0.39	0.48	0.59	0.64	0.12	0.22	0.34	0.58	0.81	1.32	1.93	2.45	3.04	3.52
Case 14	0.03	0.05	0.08	0.14	0.21	0.31	0.45	0.59	0.72	0.83	0.16	0.31	0.48	0.71	1.03	1.45	2.02	2.69	3.50	4.43
Case 15	0.03	0.05	0.07	0.11	0.16	0.23	0.32	0.42	0.55	0.70	0.13	0.25	0.39	0.65	1.02	1.48	2.16	2.76	3.43	4.00
Case 16	0.02	0.04	0.06	0.10	0.15	0.22	0.31	0.40	0.50	0.58	0.10	0.18	0.28	0.47	0.73	1.06	1.54	1.87	2.46	2.87
Case 17	0.04	0.08	0.12	0.20	0.32	0.48	0.65	0.85	1.06	1.23	0.10	0.18	0.28	0.47	0.73	1.05	1.54	1.87	2.46	2.87
Case 18	0.04	0.08	0.12	0.20	0.32	0.46	0.67	0.85	1.08	1.25	0.10	0.18	0.28	0.47	0.73	1.05	1.53	1.96	2.44	2.88
Case 19	0.03	0.06	0.09	0.16	0.25	0.38	0.64	0.69	0.84	0.96	0.08	0.18	0.27	0.43	0.64	0.91	1.29	1.68	2.15	2.62
Case 20	0.04	0.08	0.12	0.18	0.27	0.39	0.55	0.72	0.92	1.13	0.10	0.18	0.29	0.49	0.77	1.11	1.62	2.05	2.56	2.98
Case 21	0.03	0.06	0.10	0.16	0.28	0.37	0.54	0.69	0.85	0.99	0.11	0.22	0.34	0.65	0.97	1.33	1.78	2.36	3.05	3.76
Case 22	0.03	0.06	0.10	0.14	0.20	0.27	0.37	0.50	0.66	0.86	0.11	0.22	0.34	0.65	0.97	1.33	1.78	2.36	3.05	3.76
Case 23	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.51	0.68	0.89	0.09	0.18	0.28	0.41	0.57	0.79	1.08	1.46	1.84	2.64
Case 24	0.04	0.08	0.13	0.18	0.26	0.36	0.48	0.68	0.88	1.15	0.22	0.43	0.67	0.96	1.35	1.67	2.58	3.46	4.59	6.00
Case 25	0.03	0.06	0.09	0.22	0.41	0.63	0.99	1.18	1.36	1.30	0.10	0.18	0.28	0.47	0.73	1.06	1.54	1.87	2.46	2.87
Case 26	0.02	0.04	0.05	0.16	0.32	0.61	0.81	0.95	1.05	0.92	0.08	0.16	0.23	0.43	0.64	0.91	1.29	1.68	2.15	2.62
Case 27	0.03	0.06	0.10	0.24	0.45	0.70	1.10	1.31	1.48	1.39	0.13	0.24	0.37	0.63	0.93	1.77	2.72	4.29	5.11	5.77
Case 28	0.06	0.11	0.18	0.25	0.38	0.50	0.68	0.92	1.22	1.58	0.16	0.31	0.48	0.69	0.97	1.35	1.84	2.48	3.30	4.31
Case 29	0.07	0.14	0.22	0.32	0.44	0.62	0.84	1.14	1.51	1.87	0.14	0.22	0.34	0.65	0.97	1.33	1.78	2.36	3.05	3.76
Case 30	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.52	0.68	0.88	0.13	0.25	0.39	0.57	0.80	1.10	1.51	2.04	2.71	3.54
Case 31	0.06	0.11	0.17	0.24	0.35	0.48	0.68	0.90	1.18	1.52	0.16	0.32	0.49	0.72	1.04	1.45	2.00	2.68	3.51	4.51
Case 32	0.06	0.13	0.18	0.28	0.39	0.65	0.75	1.01	1.34	1.75	0.18	0.34	0.53	0.78	1.07	1.48	2.02	2.73	3.63	4.74
Case 33	0.07	0.14	0.22	0.32	0.45	0.63	0.88	1.18	1.54	2.01	0.22	0.44	0.67	0.97	1.37	1.90	2.60	3.50	4.65	6.08
Case 34	0.07	0.14	0.21	0.41	0.63	1.03	1.55	1.82	2.28	2.44	0.17	0.32	0.50	0.95	1.61	2.40	3.63	4.49	5.35	5.70
Case 35	0.06	0.12	0.18	0.34	0.56	0.82	1.21	1.52	1.85	2.08	0.15	0.29	0.45	0.61	1.32	1.85	2.89	3.63	4.41	4.81
Case 36	0.07	0.14	0.21	0.39	0.65	0.96	1.44	1.79	2.15	2.34	0.16	0.31	0.47	0.68	1.47	2.18	3.26	4.06	4.86	5.30
Case 37	0.03	0.06	0.08	0.14	0.21	0.30	0.42	0.55	0.71	0.87	0.08	0.16	0.28	0.43	0.64	0.90	1.28	1.68	2.15	2.66
Case 38	0.03	0.08	0.10	0.16	0.22	0.32	0.45	0.59	0.75	0.83	0.10	0.20	0.31	0.47	0.70	1.00	1.41	1.85	2.38	2.83
Case 39	0.04	0.07	0.11	0.18	0.27	0.38	0.55	0.71	0.90	1.08	0.13	0.25	0.39	0.62	0.94	1.34	1.91	2.48	3.15	3.80
Case 40	0.01	0.02	0.03	0.06	0.08	0.13	0.20	0.25	0.31	0.35	0.05	0.08	0.13	0.23	0.37	0.54	0.79	1.00	1.23	1.40
Case 41	0.03	0.06	0.09	0.12	0.16	0.28	0.36	0.47	0.61	0.75	0.07	0.14	0.22	0.34	0.50	0.70	0.88	1.30	1.68	2.08
Case 42	0.03	0.06	0.10	0.16	0.23	0.33	0.48	0.62	0.78	0.88	0.10	0.18	0.30	0.47	0.70	1.00	1.43	1.85	2.36	2.87
Case 43	0.03	0.07	0.10	0.17	0.28	0.40	0.59	0.75	0.83	1.06	0.08	0.17	0.28	0.44	0.70	1.01	1.49	1.89	2.33	2.68
Case 44	0.04	0.07	0.11	0.21	0.35	0.51	0.76	0.95	1.15	1.27	0.13	0.24	0.37	0.57	0.87	1.11	1.65	2.46	3.07	4.07
Case 45	0.03	0.05	0.08	0.14	0.23	0.33	0.49	0.62	0.78	0.88	0.13	0.25	0.38	0.67	0.97	1.37	1.76	2.30	2.91	3.57
Case 46	0.02	0.04	0.07	0.12	0.18	0.28	0.42	0.53	0.64	0.72	0.11	0.20	0.31	0.55	0.88	1.31	1.94	2.44	2.98	3.34
Case 47	0.02	0.04	0.06	0.11	0.16	0.23	0.32	0.45	0.59	0.78	0.16	0.28	0.48	0.72	1.03	1.45	2.01	2.68	3.50	4.47
Case 48	0.03	0.07	0.10	0.18	0.30	0.45	0.67	0.84	1.08	1.24	0.13	0.24	0.38	0.74	1.26	1.85	2.88	3.53	4.16	4.40
Case 49	0.03	0.05	0.06	0.14	0.23	0.34	0.50	0.63	0.77	0.88	0.13	0.25	0.38	0.68	1.10	1.61	2.38	3.00	3.66	4.11
Case 50	0.03	0.06	0.09	0.14	0.22	0.32	0.46	0.58	0.74	0.88	0.10	0.20	0.31	0.51	0.79	1.14	1.65	2.12	2.65	3.11
Case 51	0.04	0.07	0.10	0.18	0.30	0.44	0.65	0.82	1.00	1.12	0.12	0.23	0.38	0.63	1.03	1.51	2.23	2.81	3.42	3.83
Case 52	0.03	0.07	0.10	0.16	0.28	0.41	0.60	0.76	0.94	1.07	0.19	0.37	0.57	0.98	1.57	2.20	3.37	4.26	5.24	5.95
Case 53	0.03	0.06	0.09	0.16	0.21	0.32	0.41	0.56	0.75	0.91	0.14	0.26	0.41	0.64	1.03	1.57	2.12	2.81	3.68	4.47
Case 54	0.03	0.06	0.09	0.17	0.28	0.42	0.62	0.78	0.94	1.03	0.15	0.28	0.44	0.61	1.33	1.97	2.94	3.67	4.43	4.67
Case 55	0.03	0.06	0.09	0.17	0.30	0.45	0.68	0.84	1.08	1.24	0.13	0.24	0.38	0.63	1.26	1.85	2.88	3.53	4.16	4.40
Case 56	0.04	0.07	0.11	0.16	0.29	0.42	0.62	0.78	0.98	1.12	0.16	0.31	0.46	0.68	1.08	1.41	2.17	2.21	2.54	3.07
Case 57	0.03	0.06	0.09	0.13	0.16	0.25	0.34	0.46	0.62	0.81	0.15	0.28	0.44	0.63	1.08					

Case Name	Day by day cage average NH3										Day by day cage maximum NH3									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Basemap	1.15	2.16	3.37	6.33	10.68	16.82	23.78	29.51	35.35	38.09	1.67	3.17	4.69	8.16	15.47	22.96	34.53	42.84	51.32	55.30
Case 02	0.69	1.72	2.66	4.03	5.92	8.35	11.72	15.45	18.99	25.01	1.29	2.51	3.87	5.87	8.61	12.14	17.05	22.48	26.08	38.39
Case 03	0.82	1.59	2.45	3.53	4.96	6.88	9.41	12.70	16.87	22.05	1.34	2.81	4.03	5.81	6.16	11.32	15.50	20.90	27.76	36.29
Case 04	0.90	1.73	2.67	4.18	6.26	6.96	12.76	16.61	21.17	25.80	1.20	2.32	3.58	5.62	6.45	12.03	17.13	22.31	26.44	34.67
Case 05	0.91	1.78	2.72	4.23	6.32	8.99	12.75	16.64	21.31	26.14	1.22	2.38	3.64	5.87	6.46	12.03	17.07	22.30	26.53	34.99
Case 06	0.88	1.67	2.58	3.72	5.22	7.24	9.92	13.37	17.76	23.22	1.38	2.68	4.13	5.95	8.37	11.60	15.88	21.42	26.44	37.16
Case 07	1.24	2.35	3.62	5.71	11.21	16.60	24.87	30.65	37.22	40.46	1.80	3.43	6.26	6.76	18.35	24.20	38.26	45.13	54.26	59.00
Case 08	0.98	1.89	2.92	4.63	7.53	10.86	15.79	20.22	25.23	29.55	1.39	2.67	4.12	6.81	10.62	15.34	22.28	28.50	35.57	41.88
Case 09	0.90	1.75	2.69	3.66	5.46	7.57	10.36	13.67	16.55	24.25	1.52	2.97	4.57	6.59	8.27	12.86	17.60	23.74	31.53	41.21
Case 10	1.11	2.14	3.31	4.04	7.17	10.06	14.03	18.81	24.25	30.72	1.67	3.24	5.00	7.47	10.83	16.20	21.20	28.12	38.65	45.42
Case 11	1.11	2.14	3.30	5.42	8.40	12.10	17.51	22.42	28.16	33.21	1.53	2.94	4.53	7.43	11.51	16.56	24.01	30.82	38.60	45.52
Case 12	1.18	2.23	3.45	5.68	8.78	12.68	16.32	23.52	29.43	34.87	1.59	3.06	4.72	7.76	12.02	17.33	25.08	32.20	40.30	47.47
Case 13	1.33	2.52	3.69	7.21	12.05	17.85	26.75	33.29	40.02	43.47	1.80	3.04	4.68	6.59	14.52	21.50	32.23	40.10	48.21	52.37
Case 14	1.17	2.24	3.45	5.82	9.17	13.30	18.40	24.73	30.87	35.51	1.38	2.65	4.06	6.88	10.84	15.72	22.94	29.23	38.26	41.99
Case 15	1.11	2.14	3.31	4.94	7.17	10.06	14.03	18.81	24.25	30.72	1.57	3.24	5.00	7.47	10.83	15.20	21.20	28.12	38.65	46.42
Case 16	1.17	2.24	3.45	5.76	9.02	13.05	18.89	24.26	30.16	35.20	1.65	3.18	4.88	6.13	12.74	16.43	26.82	34.26	42.65	49.71
Case 17	0.68	1.84	2.63	4.71	7.38	10.67	15.52	19.84	24.70	28.62	1.30	2.49	3.64	5.40	10.01	14.49	21.07	26.93	33.54	39.13
Case 18	0.94	1.81	2.76	4.62	7.19	10.38	15.07	19.30	24.10	26.27	1.26	2.47	3.60	5.66	8.76	14.12	20.48	28.24	32.77	38.44
Case 19	0.91	1.75	2.65	4.61	7.36	10.72	15.74	19.95	24.59	28.11	1.24	2.38	3.67	6.26	10.04	14.63	21.44	27.21	33.53	38.34
Case 20	0.87	1.68	2.58	4.04	6.06	8.62	12.26	15.88	20.40	24.94	1.23	2.38	3.67	5.74	8.80	12.25	17.41	22.70	26.98	35.42
Case 21	0.85	1.83	2.82	4.73	7.44	10.79	16.72	20.05	24.90	28.90	1.35	2.59	3.99	6.59	10.52	15.24	22.22	28.34	35.20	40.85
Case 22	0.67	1.69	2.60	3.77	5.34	7.42	10.20	13.71	18.13	23.55	1.37	2.88	4.06	5.64	6.41	11.69	16.00	21.59	28.57	37.11
Case 23	0.88	1.67	2.58	3.71	5.22	7.24	9.91	13.37	17.76	23.22	1.33	2.58	3.96	5.74	6.07	11.18	15.32	20.67	27.45	35.88
Case 24	0.88	1.91	2.94	4.24	5.66	8.28	11.30	15.25	20.25	26.47	1.57	3.06	4.72	6.80	9.58	13.26	16.14	24.47	32.60	42.49
Case 25	1.64	3.04	4.69	11.05	20.64	31.63	49.49	59.31	67.69	64.60	2.15	3.89	6.15	14.47	27.02	41.42	64.81	77.88	66.61	84.85
Case 26	2.25	4.02	6.20	16.42	37.17	58.21	93.38	106.47	120.66	105.88	2.73	4.80	7.55	22.42	45.23	70.83	113.63	133.21	148.65	126.57
Case 27	1.75	3.21	4.95	12.31	23.47	36.19	67.03	67.91	78.69	71.76	2.51	4.61	7.11	17.70	33.74	52.03	81.98	97.63	110.28	103.19
Case 28	0.81	1.77	2.73	3.93	5.53	7.67	10.50	14.16	18.81	24.59	1.41	2.74	4.22	6.06	6.56	11.88	18.24	21.90	29.09	38.02
Case 29	0.82	1.79	2.75	3.97	5.58	7.74	10.59	14.28	18.97	24.80	1.33	2.59	3.96	5.75	6.08	11.21	15.34	20.70	27.48	35.93
Case 30	0.67	1.69	2.80	3.75	6.27	7.31	10.01	13.50	17.93	23.44	1.34	2.61	4.02	5.79	6.15	11.30	15.47	20.66	27.71	36.22
Case 31	1.01	1.98	3.02	4.45	6.37	8.89	12.30	18.44	21.69	27.73	1.48	2.67	4.43	6.52	9.33	13.03	18.02	24.08	31.83	40.61
Case 32	0.61	1.77	2.73	3.63	5.53	6.94	10.46	14.15	18.79	24.57	1.45	2.82	4.35	6.27	8.82	12.23	16.74	22.58	30.00	39.21
Case 33	1.03	2.00	3.08	4.44	6.24	8.66	11.85	15.88	21.23	27.76	1.53	2.31	4.89	7.05	8.81	13.74	18.81	25.37	33.66	44.04
Case 34	1.01	1.92	2.86	5.86	9.63	14.24	21.65	26.77	31.90	34.00	1.44	2.72	4.20	6.03	13.66	20.34	30.71	37.98	45.24	46.23
Case 35	0.93	1.78	2.75	4.60	6.01	11.77	17.46	21.92	26.67	26.69	1.43	2.72	4.20	7.49	12.24	17.99	25.70	33.51	40.78	45.38
Case 36	1.00	1.90	2.93	5.44	9.09	13.47	20.19	25.12	30.18	32.78	1.38	2.52	4.05	7.51	12.58	18.60	27.88	34.69	41.70	45.28
Case 37	0.90	1.74	2.68	4.13	6.14	8.70	12.31	16.12	20.70	25.65	1.17	2.27	3.50	5.41	8.03	11.38	16.10	21.09	27.08	33.42
Case 38	0.63	1.80	2.77	4.26	6.38	9.02	12.76	16.71	21.45	26.48	1.39	2.70	4.16	6.42	8.54	13.54	19.15	25.08	32.18	38.73
Case 39	0.97	1.67	2.68	4.58	6.94	9.92	14.16	18.39	23.33	28.16	1.41	2.72	4.19	6.55	10.08	14.40	20.68	26.72	33.88	40.94
Case 40	1.04	2.00	3.08	5.33	8.55	12.48	18.36	23.22	28.53	32.42	1.47	2.61	4.34	7.50	12.02	17.55	25.82	32.68	40.12	45.60
Case 41	0.88	1.71	2.84	4.06	6.01	6.51	12.02	15.77	20.28	26.10	1.25	2.41	3.71	5.72	6.47	11.96	16.93	22.21	28.56	35.36
Case 42	0.61	1.75	2.70	4.25	6.41	9.14	13.03	18.94	21.58	28.19	1.33	2.57	3.88	6.23	6.40	13.40	18.11	24.86	31.63	38.42
Case 43	0.98	1.88	2.90	4.96	7.90	11.50	16.67	21.40	26.38	30.19	1.28	2.48	3.79	6.49	10.34	16.06	22.09	28.02	34.54	36.62
Case 44	1.13	2.14	3.31	6.03	9.97	14.71	21.96	27.43	33.16	38.40	1.45	2.77	4.26	7.77	12.86	18.89	28.33	35.38	42.76	49.95
Case 45	1.02	1.95	3.01	5.22	6.40	12.27	16.08	22.84	26.03	31.77	1.42	2.71	4.18	7.28	11.68	17.08	26.13	31.78	38.96	44.18
Case 46	1.03	1.97	3.03	5.35	6.68	12.72	16.28	23.66	28.24	32.44	1.45	2.75	4.26	7.56	12.28	17.87	26.60	33.48	40.67	45.84
Case 47	1.04	1.96	3.06	5.38	6.67	12.68	16.73	23.62	28.89	32.55	1.48	2.84	4.38	7.67	12.40	18.15	28.80	33.79	41.34	46.57
Case 48	1.12	2.12	3.28	6.06	9.91	14.82	21.83	27.26	32.92	36.12	1.44	2.75	4.24	7.74	12.81	18.91	28.23	35.26	42.58	47.71
Case 49	1.07	2.05	3.16	5.56	9.02	13.19	19.54	24.81	30.08	33.78	1.42	2.72	4.19	7.37	11.95	17.51	25.89	32.60	39.82	44.72
Case 50	0.97	1.86	2.87	4.73	7.38	11.14	16.32	22.46	27.80	32.49	1.36	2.63	4.05	6.67	10.37	14.97	21.70	27.81	34.78	40.85
Case 51	1.08	2.07	3.19	5.64	9.17	13.45	19.91	25.05	30.56	34.22	1.44	2.74	4.23	7.48	12.16	17.82	28.39	33.18	40.49	45.34
Case 52	0.88	1.59	2.60	4.49	7.20	10.51	15.47	19.47	24.04	27.33	1.39	2.68	4.41	6.98	16.70	23.81	38.08	44.13	51.62	63.41
Case 53	1.19	2.24	3.45	7.02	12.29	18.48	28.24	34.84	40.56	41.61	1.52	2.88	4.41	6.98	11.24	17.87	26.72	33.48	40.67	45.84
Case 54	0.99	1.89	2.92	6.32	8.80	12.98	19.37	24.20	26.22	32.12	1.42	2.71	4.18	7.61	12.60	18.59	27.75	34.66	41.88	46.00
Case 55	1.09	2.06	3.18	6.22	10.69	15.47	22.26	28.53	35.38	37.24	1.40	2.84	4.09</td							

Case Name	Day by day room breathing zone average NH3										Day by day room breathing zone maximum NH3										
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
Baseline	0.02	0.04	0.06	0.08	0.11	0.18	0.22	0.29	0.30	0.51	0.07	0.14	0.21	0.31	0.43	0.50	0.83	1.11	1.48	1.93	
Case 02	0.03	0.07	0.10	0.15	0.21	0.28	0.38	0.53	0.70	0.81	0.09	0.18	0.28	0.41	0.57	0.70	1.08	1.46	1.94	2.53	
Case 03	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.52	0.69	0.80	0.09	0.17	0.27	0.38	0.54	0.75	1.02	1.38	1.83	2.30	
Case 04	0.03	0.06	0.10	0.14	0.20	0.27	0.37	0.50	0.67	0.87	0.08	0.17	0.28	0.38	0.54	0.74	1.02	1.37	1.83	2.38	
Case 05	0.03	0.05	0.08	0.11	0.18	0.22	0.30	0.40	0.53	0.69	0.08	0.16	0.24	0.35	0.48	0.67	0.82	1.24	1.65	2.16	
Case 06	0.04	0.07	0.11	0.16	0.23	0.31	0.43	0.68	0.77	1.01	0.08	0.16	0.26	0.35	0.50	0.69	0.94	1.27	1.69	2.21	
Case 07	0.03	0.06	0.09	0.13	0.18	0.25	0.34	0.46	0.61	0.80	0.10	0.38	0.58	0.83	1.17	1.63	2.23	3.00	3.98	5.21	
Case 08	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.52	0.68	0.89	0.12	0.23	0.35	0.51	0.71	0.98	1.35	1.82	2.42	3.18	
Case 09	0.05	0.09	0.14	0.20	0.28	0.38	0.53	0.71	0.94	1.23	0.14	0.28	0.43	0.62	0.88	1.21	1.66	2.24	2.98	3.88	
Case 10	0.02	0.03	0.05	0.07	0.09	0.13	0.18	0.24	0.31	0.41	0.08	0.18	0.25	0.36	0.50	0.68	0.95	1.28	1.70	2.22	
Case 11	0.02	0.05	0.07	0.11	0.15	0.21	0.28	0.39	0.51	0.67	0.12	0.23	0.35	0.50	0.70	0.98	1.34	1.80	2.38	3.13	
Case 12	0.01	0.02	0.03	0.04	0.05	0.07	0.10	0.14	0.18	0.24	0.12	0.23	0.38	0.52	0.73	1.01	1.39	1.87	2.48	3.26	
Case 13	0.02	0.04	0.08	0.08	0.12	0.18	0.22	0.30	0.39	0.52	0.15	0.28	0.44	0.63	0.80	1.23	1.89	2.27	3.02	3.95	
Case 14	0.03	0.05	0.08	0.12	0.18	0.23	0.31	0.42	0.66	0.73	0.11	0.22	0.34	0.49	0.70	0.98	1.32	1.78	2.38	3.00	
Case 15	0.02	0.05	0.07	0.11	0.15	0.21	0.29	0.30	0.52	0.67	0.16	0.31	0.48	0.69	0.97	1.34	1.83	2.48	3.28	4.30	
Case 16	0.02	0.04	0.06	0.08	0.12	0.18	0.22	0.30	0.38	0.52	0.13	0.25	0.39	0.57	0.80	1.10	1.51	2.04	2.70	3.53	
Case 17	0.04	0.08	0.12	0.17	0.25	0.34	0.47	0.63	0.83	1.09	0.09	0.18	0.28	0.41	0.57	0.70	1.08	1.46	1.94	2.54	
Case 18	0.04	0.08	0.12	0.16	0.25	0.35	0.47	0.64	0.85	1.11	0.08	0.18	0.28	0.41	0.57	0.80	1.08	1.47	1.95	2.55	
Case 19	0.03	0.06	0.09	0.13	0.18	0.26	0.35	0.48	0.63	0.83	0.12	0.22	0.35	0.50	0.70	0.97	1.33	1.80	2.38	3.12	
Case 20	0.04	0.08	0.12	0.17	0.24	0.33	0.45	0.61	0.80	1.05	0.09	0.18	0.27	0.39	0.55	0.76	1.05	1.41	1.87	2.45	
Case 21	0.03	0.06	0.10	0.14	0.20	0.27	0.37	0.50	0.67	0.87	0.10	0.19	0.29	0.42	0.50	0.82	1.12	1.61	2.00	2.82	
Case 22	0.03	0.06	0.10	0.14	0.18	0.27	0.37	0.49	0.66	0.86	0.11	0.22	0.34	0.48	0.60	0.95	1.30	1.75	2.33	3.04	
Case 23	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.51	0.68	0.80	0.08	0.18	0.28	0.41	0.57	0.78	1.08	1.46	1.84	2.54	
Case 24	0.04	0.08	0.13	0.18	0.26	0.36	0.48	0.65	0.83	1.16	0.22	0.43	0.67	0.96	1.35	1.87	2.66	3.46	6.00		
Case 25	0.03	0.06	0.09	0.14	0.19	0.28	0.38	0.48	0.65	0.85	0.12	0.24	0.36	0.52	0.74	1.02	1.40	1.88	2.60	3.27	
Case 26	0.02	0.04	0.05	0.10	0.18	0.28	0.40	0.40	0.59	0.62	0.08	0.15	0.23	0.45	0.76	1.13	1.71	2.12	2.52	2.68	
Case 27	0.03	0.06	0.10	0.15	0.21	0.30	0.42	0.58	0.72	0.90	0.12	0.24	0.37	0.57	0.83	1.18	1.65	2.18	2.81	3.61	
Case 28	0.06	0.11	0.18	0.25	0.38	0.50	0.68	0.82	1.22	1.58	0.16	0.31	0.48	0.69	0.97	1.35	1.84	2.48	3.30	4.31	
Case 29	0.07	0.14	0.22	0.32	0.44	0.62	0.64	1.14	1.61	1.87	0.14	0.27	0.42	0.60	0.85	1.17	1.80	2.18	2.88	3.78	
Case 30	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.52	0.68	0.89	0.13	0.25	0.39	0.57	0.80	1.10	1.61	2.04	2.71	3.64	
Case 31	0.06	0.11	0.17	0.24	0.34	0.47	0.64	0.86	1.15	1.50	0.18	0.32	0.48	0.71	1.00	1.38	1.88	2.55	3.39	4.43	
Case 32	0.06	0.13	0.18	0.28	0.30	0.55	0.75	1.01	1.34	1.76	0.18	0.34	0.53	0.76	1.07	1.48	2.02	2.73	3.83	4.74	
Case 33	0.07	0.14	0.22	0.32	0.45	0.63	0.86	1.18	1.54	2.01	0.22	0.44	0.57	0.77	1.03	1.37	1.80	2.60	3.50	4.65	8.08
Case 34	0.07	0.14	0.21	0.31	0.43	0.60	0.82	1.10	1.46	1.81	0.17	0.32	0.50	0.71	1.01	1.39	1.91	2.57	3.42	4.47	
Case 35	0.06	0.12	0.19	0.27	0.39	0.54	0.73	0.99	1.31	1.72	0.15	0.29	0.45	0.65	0.92	1.28	1.75	2.38	3.13	4.08	
Case 36	0.07	0.14	0.22	0.32	0.44	0.62	0.80	1.08	1.44	1.88	0.16	0.31	0.47	0.68	0.96	1.33	1.82	2.48	3.26	4.27	
Case 37	0.03	0.06	0.09	0.13	0.10	0.28	0.35	0.47	0.63	0.82	0.09	0.18	0.28	0.40	0.56	0.78	1.07	1.44	1.82	2.51	
Case 38	0.03	0.08	0.10	0.14	0.20	0.27	0.37	0.50	0.67	0.88	0.10	0.20	0.31	0.44	0.62	0.88	1.18	1.50	2.12	2.77	
Case 39	0.04	0.07	0.11	0.16	0.22	0.31	0.43	0.58	0.75	1.00	0.13	0.25	0.39	0.56	0.78	1.08	1.50	2.02	2.68	3.61	
Case 40	0.01	0.02	0.03	0.05	0.07	0.09	0.13	0.17	0.23	0.30	0.04	0.06	0.13	0.18	0.27	0.37	0.51	0.60	0.92	1.20	
Case 41	0.03	0.05	0.08	0.11	0.18	0.22	0.30	0.41	0.55	0.71	0.07	0.14	0.22	0.31	0.44	0.61	0.84	1.13	1.50	1.07	
Case 42	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.51	0.68	0.89	0.10	0.18	0.30	0.43	0.50	0.83	1.14	1.53	2.03	2.66	
Case 43	0.03	0.07	0.10	0.15	0.21	0.20	0.30	0.53	0.70	0.91	0.08	0.17	0.26	0.37	0.52	0.72	0.98	1.32	1.76	2.30	
Case 44	0.04	0.07	0.11	0.17	0.23	0.31	0.44	0.60	0.79	1.04	0.12	0.24	0.37	0.53	0.75	1.04	1.42	1.92	2.55	3.33	
Case 45	0.03	0.05	0.08	0.12	0.17	0.23	0.31	0.44	0.60	0.74	0.13	0.25	0.38	0.55	0.78	1.08	1.48	2.08	2.64	3.46	
Case 46	0.02	0.04	0.07	0.10	0.14	0.19	0.26	0.36	0.49	0.64	0.15	0.24	0.31	0.45	0.63	0.88	1.20	1.62	2.15	2.81	
Case 47	0.02	0.04	0.08	0.09	0.13	0.17	0.24	0.32	0.43	0.56	0.09	0.18	0.27	0.40	0.56	0.77	1.06	1.43	1.88	2.48	
Case 48	0.03	0.07	0.10	0.15	0.20	0.28	0.38	0.52	0.69	0.91	0.16	0.31	0.47	0.68	0.95	1.32	1.81	2.44	3.25	4.24	
Case 49	0.03	0.05	0.08	0.12	0.18	0.23	0.31	0.42	0.56	0.73	0.13	0.25	0.38	0.55	0.78	1.08	1.48	2.00	2.65	3.47	
Case 50	0.03	0.06	0.09	0.12	0.16	0.21	0.33	0.44	0.50	0.77	0.10	0.20	0.31	0.44	0.62	0.87	1.18	1.80	2.12	2.78	
Case 51	0.03	0.07	0.10	0.15	0.21	0.20	0.40	0.54	0.72	0.84	0.12	0.23	0.36	0.52	0.72	1.00	1.37	1.85	2.46	3.22	
Case 52	0.03	0.07	0.10	0.15	0.21	0.28	0.39	0.53	0.70	0.91	0.19	0.37	0.57	0.82	1.15	1.59	2.18	2.84	3.00	5.10	
Case 53	0.03	0.06	0.09	0.13	0.18	0.26	0.35	0.47	0.63	0.82	0.09	0.17	0.26	0.38	0.53	0.74	1.01	1.36	1.81	2.38	
Case 54	0.03	0.06	0.09	0.13	0.18	0.26	0.36	0.49	0.64	0.84	0.15	0.29	0.44	0.64	0.90	1.24	1.70	2.30	3.05	3.88	
Case 55	0.03	0.06	0.09	0.13	0.18	0.25	0.34	0.46	0.61	0.80	0.13	0.24	0.38	0.54	0.76	1.06	1.45	1.85	2.50	3.38	
Case 56	0.04	0.07	0.11	0.16	0.22	0.30	0.42	0.56	0.74	0.87	0.08	0.16	0.25	0.35	0.50	0.60	0.94	1.27	1.68	2.21	
Case 57	0.03	0.06	0.09	0.13	0.18	0.25	0.34	0.46	0.62	0.81	0.15	0.28	0.44	0.63	0.88	1.22	1.68				

Case Name	Day by day cage average NH3										Day by day cage maximum NH3										
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
Basecase	1.12	2.19	3.37	4.85	6.83	9.47	12.96	17.48	23.21	30.34	1.63	3.17	4.69	7.05	9.91	13.74	18.11	25.37	33.70	44.05	
Case 02	0.99	1.72	2.66	3.93	5.38	7.47	10.22	13.78	18.31	23.94	1.29	2.51	3.87	5.57	7.04	10.97	14.97	20.06	26.85	34.63	
Case 03	0.92	1.59	2.45	3.53	4.96	6.89	9.41	12.70	16.87	22.05	1.34	2.61	4.03	5.91	9.19	11.32	15.50	20.90	27.76	36.29	
Case 04	0.99	1.73	2.67	3.84	5.40	7.49	10.28	13.84	18.38	24.02	1.18	2.32	3.58	5.16	7.26	10.07	13.78	18.59	24.69	32.27	
Case 05	0.91	1.76	2.72	3.82	5.51	7.64	10.49	14.11	19.74	24.50	1.21	2.39	3.84	5.25	7.38	10.23	14.00	19.99	25.09	32.80	
Case 06	0.99	1.67	2.58	3.72	5.22	7.24	9.92	13.37	17.74	23.22	1.38	2.88	4.13	5.95	8.37	11.60	15.88	21.42	28.44	37.19	
Case 07	1.21	2.35	3.62	5.22	7.34	10.19	13.84	16.60	24.07	32.63	1.76	3.43	5.29	7.81	10.71	14.85	20.32	27.41	36.40	47.59	
Case 09	0.97	1.69	2.62	4.21	6.92	6.21	11.23	15.15	20.12	26.30	1.37	2.67	4.12	5.63	8.34	11.57	15.63	21.38	28.37	37.08	
Case 06	0.90	1.75	2.69	3.69	5.46	7.57	10.38	13.87	18.55	24.25	1.52	2.87	4.57	6.59	9.27	12.88	17.60	23.74	31.63	41.21	
Case 10	1.10	2.14	3.31	4.77	6.70	8.28	12.72	17.16	22.79	28.78	1.67	3.24	5.00	7.20	10.13	14.04	18.22	25.92	34.43	45.00	
Case 11	1.10	2.14	3.30	4.76	6.70	8.29	12.71	17.16	22.79	29.77	1.51	2.64	4.53	6.53	9.16	12.73	17.43	23.51	31.22	40.81	
Case 12	1.15	2.23	3.45	4.67	6.96	6.88	13.25	17.88	23.75	31.04	1.57	3.06	4.72	6.9	9.56	13.29	18.15	24.48	32.52	42.50	
Case 13	1.30	2.52	3.89	5.60	7.96	10.93	14.95	20.17	26.78	35.02	1.56	3.04	4.68	6.75	6.49	13.16	18.01	24.30	32.27	42.18	
Case 14	1.15	2.24	3.46	4.99	7.01	9.72	13.30	17.84	23.82	31.14	1.38	2.65	4.09	6.98	6.26	11.46	15.72	21.21	28.16	36.82	
Case 15	1.10	2.14	3.31	4.77	8.70	9.29	12.72	17.15	22.78	28.79	1.87	3.24	5.00	7.20	10.13	14.04	18.22	25.82	34.43	45.00	
Case 16	1.16	2.24	3.45	4.98	7.00	9.71	13.29	17.92	23.60	31.11	1.63	3.16	4.88	7.03	9.69	13.71	17.66	25.31	33.62	43.65	
Case 17	0.94	1.84	2.63	4.08	5.74	7.86	10.96	14.69	16.52	25.51	1.29	2.49	3.84	5.54	7.78	10.81	14.79	19.65	26.49	34.63	
Case 19	0.93	1.91	2.70	4.03	6.67	7.86	10.75	14.50	16.26	25.18	1.27	2.47	3.90	5.48	7.70	10.68	14.62	16.72	28.19	34.24	
Case 16	0.90	1.76	2.59	3.69	5.64	7.57	10.38	13.67	16.56	24.26	1.22	2.38	3.57	5.28	7.44	10.32	14.13	18.06	25.31	33.08	
Case 20	0.66	1.68	2.59	3.72	5.24	7.25	9.94	13.41	17.91	23.28	1.22	2.38	3.67	5.26	7.44	10.32	14.12	16.05	25.30	33.07	
Case 21	0.84	1.83	2.82	4.07	5.72	7.93	10.85	14.64	16.44	25.42	1.33	2.58	3.88	5.75	6.06	11.21	15.34	20.59	27.48	35.92	
Case 22	0.67	1.68	2.80	3.75	5.27	7.30	10.00	13.48	17.91	23.41	1.38	2.66	4.06	6.90	6.30	11.51	15.75	21.24	29.21	38.88	
Case 23	0.86	1.87	2.58	3.71	6.22	7.24	9.81	13.37	17.76	23.22	1.33	2.58	3.98	5.74	5.90	6.07	11.16	15.32	20.67	27.45	35.88
Case 24	0.69	1.91	2.94	4.24	6.96	9.26	11.30	15.25	20.25	26.47	1.57	3.06	4.72	6.80	9.58	13.26	18.14	24.47	32.60	42.49	
Case 25	1.56	3.04	4.69	6.77	9.51	13.19	18.05	24.35	32.35	42.28	2.05	3.99	6.16	8.66	12.46	17.28	23.64	31.89	42.38	55.37	
Case 26	2.12	4.02	6.20	11.92	20.30	30.25	45.71	66.48	67.24	71.52	2.66	4.80	7.55	14.51	24.70	36.61	55.62	66.72	61.82	97.03	
Case 27	1.66	3.21	4.95	7.53	11.08	15.62	21.95	29.91	37.88	46.66	2.38	4.61	7.11	10.82	15.80	22.45	31.65	41.57	53.72	97.08	
Case 29	0.91	1.77	2.73	3.93	5.63	7.87	10.50	14.16	19.61	24.59	1.41	2.74	4.22	6.08	8.56	11.69	16.24	21.80	28.09	38.02	
Case 28	0.62	1.78	2.76	3.67	5.56	7.74	10.59	14.28	18.67	24.80	1.33	2.59	3.86	5.75	6.08	11.21	15.34	20.70	27.46	35.93	
Case 30	0.97	1.69	2.60	3.76	6.27	7.31	10.01	13.50	17.93	23.44	1.34	2.61	4.02	5.76	8.16	11.30	15.47	20.86	27.71	38.22	
Case 31	1.01	1.88	3.02	4.36	6.13	9.50	11.63	15.59	20.84	27.25	1.46	2.67	4.43	6.38	8.98	12.45	17.04	22.99	30.53	39.90	
Case 32	0.91	1.77	2.73	3.93	5.53	7.88	10.49	14.15	16.79	24.57	1.45	2.62	4.35	6.27	6.02	12.23	16.74	22.59	30.00	38.21	
Case 33	1.03	2.00	3.08	4.44	6.24	6.66	11.65	15.99	21.23	27.75	1.83	3.17	4.68	7.05	9.91	13.74	19.91	25.37	33.68	44.04	
Case 34	0.99	1.92	2.96	4.26	6.00	6.31	11.38	15.35	20.39	26.65	1.40	2.72	4.20	6.05	6.50	11.76	16.14	21.77	26.81	37.60	
Case 35	0.62	1.76	2.75	3.96	5.57	7.72	10.67	14.28	19.93	24.76	1.40	2.72	4.20	6.05	6.50	11.80	16.18	21.78	28.94	37.63	
Case 36	0.88	1.80	2.93	4.22	5.94	6.24	11.27	15.20	20.19	26.40	1.35	2.63	4.05	5.83	6.20	11.38	15.57	21.00	27.89	36.46	
Case 37	0.68	1.74	2.66	3.86	5.43	7.52	10.30	13.99	19.45	24.11	1.17	2.27	3.60	5.05	7.10	8.64	13.47	18.17	24.13	31.54	
Case 38	0.82	1.80	2.77	3.99	5.62	7.70	10.68	14.38	19.10	24.66	1.38	2.70	4.16	6.00	8.43	11.59	15.00	21.58	29.67	37.47	
Case 39	0.96	1.97	2.86	4.18	5.95	6.11	11.09	14.96	19.88	25.68	1.40	2.72	4.16	6.04	9.46	11.77	16.11	21.73	29.67	37.73	
Case 40	1.03	2.00	3.08	4.44	6.25	6.68	11.68	18.00	21.24	27.77	1.45	2.91	4.34	6.25	6.76	12.19	16.68	22.50	29.69	39.08	
Case 41	0.98	1.71	2.64	3.90	5.35	7.41	10.15	13.66	16.18	23.76	1.24	2.41	3.71	5.35	7.35	10.44	14.29	16.26	25.60	33.47	
Case 42	0.90	1.75	2.70	3.89	5.47	7.58	10.37	13.98	19.58	24.29	1.32	2.57	3.96	5.70	6.02	11.12	15.22	20.52	27.26	35.63	
Case 43	0.97	1.98	2.90	4.17	5.97	9.14	11.14	15.02	19.65	26.06	1.26	2.57	3.96	5.70	6.02	11.77	16.10	21.72	29.05	37.71	
Case 44	1.10	2.14	3.31	4.76	6.70	9.29	12.71	17.15	22.78	29.77	1.42	2.77	4.20	6.15	8.64	11.99	16.40	22.12	28.38	38.41	
Case 45	1.00	1.95	3.01	4.34	6.10	6.46	11.59	16.82	20.74	27.11	1.36	2.66	4.06	5.60	6.30	11.51	15.75	21.24	26.21	36.99	
Case 46	1.01	1.97	3.03	4.37	6.14	6.52	11.66	15.73	20.68	27.31	1.43	2.78	4.29	6.19	9.99	12.04	18.48	22.23	28.63	38.60	
Case 47	1.02	1.99	3.08	4.41	6.20	6.60	11.77	15.88	21.09	27.59	1.46	2.84	4.38	6.31	9.07	12.30	16.84	22.72	30.17	39.44	
Case 48	1.09	2.12	3.26	4.72	6.84	9.21	12.60	17.00	22.67	28.51	1.41	2.75	4.24	6.11	9.56	11.91	16.29	21.99	29.16	38.19	
Case 49	1.05	2.05	3.16	4.55	6.41	6.09	12.16	16.40	21.78	29.47	1.40	2.72	4.19	6.03	6.48	11.77	16.10	21.72	29.05	37.71	
Case 50	0.66	1.66	2.67	4.14	5.92	6.79	11.05	14.90	19.79	25.67	1.35	2.63	4.05	5.93	6.20	11.38	15.57	21.00	27.69	38.48	
Case 51	1.12	2.19	3.37	4.06	6.84	6.48	12.07	17.38	23.05	30.13	1.77	3.45	5.31	7.66	10.77	14.63	20.43	27.57	36.61	47.96	
Case 52	1.22	2.38	3.67	5.26	7.46	10.32	14.13	19.06	25.32	33.09	1.52	2.68	4.57	6.56	9.27	12.85	17.59	23.72	31.50	41.19	
Case 53	0.81	1.77	2.64	4.15	5.91	6.96	12.26	16.54	21.86	26.71	1.47	2.96	4.41	6.35	6.93	12.39	16.85	22.87	30.37	36.70	
Case 54	0.97	1.99	2.92	4.20	6.51	9.20	11.22	16.14	20.10	26.29	1.39	2.71	4.16	5.02	6.02	11.74	16.07	21.68	28.79	37.64	
Case 55	1.08	2.06	3.18	4.59	6.45	9.94	12.24	16.51	21.93	29.67	1.38	2.88	4.09	5.90	8.30	13.50	17.51	21.24	26.21	38.88	
Case 56	0.98	1.91	2.94	4.24																	

3. RANKINGS OF RESULTS OF WHOLE ROOM RUNS

3.1 Introduction

The following tables present rankings of the results of the CFD room simulations based on Room (scientists' breathing zone) and cages mean values for CO₂ and NH₃ (day 4) concentrations, temperature, and relative humidity. The tables start with the case with the lowest value and list the rest in ascending order. The case number should be used to identify all details of the case. The supply diffuser type, exhaust location, supply flow rate, and supply discharge temperature are given to provide a quick overview of the case.

Discussion of these tables can be found in volume I, section 3.3.

Table 3.01 Ranking of Cases with respect to Room Temperature

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room Temp (°C)	Room Temp (°F)
Case 66	Low Ind	Low	5	6.6	43.9	18.6	65.6
Case 62	Low Ind	Low	5	6.6	43.9	19.1	66.5
Case 53	Radial	Ceiling	15	18.8	65.8	19.8	67.6
Case 55	Low Ind	Ceiling	15	18.8	65.8	19.8	67.6
Case 54	Slot	Ceiling	15	18.8	65.8	19.8	67.6
Case 36	Low Ind	Ceiling	15	17.5	63.5	19.9	67.8
Case 35	Slot	Ceiling	15	17.5	63.5	20.0	67.9
Case 34	Radial	Ceiling	15	17.5	63.5	20.0	67.9
Case 07	Low Ind	Ceiling	15	18.8	65.8	20.0	67.9
Case 98	Low Ind	Ceiling	15	17.5	63.5	20.0	68.0
Case 96	Radial	Ceiling	15	17.5	63.5	20.0	68.0
Case 97	Slot	Ceiling	15	17.5	63.5	20.0	68.0
Case 16	Radial	Ceiling	15	18.8	65.8	20.1	68.1
Case 46	Radial	Ceiling	15	18.8	65.8	20.2	68.3
Case 67	Low Ind	Low	10	14.8	58.6	20.2	68.3
Case 19	Radial	Ceiling	15	18.8	65.8	20.2	68.4
Case 18	Low Ind	Ceiling	15	18.8	65.8	20.2	68.4
Case 17	Slot	Ceiling	15	18.8	65.8	20.2	68.4
Case 94	Slot	Ceiling	15	17.5	63.5	20.2	68.4
Case 95	Low Ind	Ceiling	15	17.5	63.5	20.2	68.4
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	20.2	68.4
Case 47	Radial	Ceiling	15	18.8	65.8	20.3	68.5
Case 93	Radial	Ceiling	15	17.5	63.5	20.3	68.5
Case 45	Radial	Ceiling	15	18.8	65.8	20.3	68.5
Case 60	Low Ind	High	15	18.8	65.8	20.3	68.5
Basecase	Radial	Ceiling	15	18.8	65.8	20.3	68.5
Case 25	Radial	Ceiling	15	18.8	65.8	20.3	68.5
Case 27	Low Ind	Ceiling	15	18.8	65.8	20.3	68.6
Case 56	Radial	High	15	18.8	65.8	20.3	68.6
Case 59	Slot	Low	15	18.8	65.8	20.3	68.6
Case 63	Low Ind	Low	10	14.8	58.6	20.3	68.6
Case 90	Radial	Ceiling	15	18.8	65.8	20.4	68.7
Case 77	Slot	Ceiling	15	18.8	65.8	20.4	68.7
Case 76	Radial	Ceiling	15	18.8	65.8	20.4	68.7
Case 21	Low Ind	Ceiling	15	18.8	65.8	20.4	68.7
Case 92	Low Ind	Ceiling	15	18.8	65.8	20.4	68.7
Case 26	Slot	Ceiling	15	18.8	65.8	20.4	68.7
Case 78	Low Ind	Ceiling	15	18.8	65.8	20.4	68.7
Case 04	Slot	Ceiling	15	18.8	65.8	20.4	68.8
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	20.4	68.8
Case 91	Slot	Ceiling	15	18.8	65.8	20.5	68.8
Case 50	Radial	Ceiling	15	18.8	65.8	20.5	68.8
Case 52	Radial	Ceiling	15	18.8	65.8	20.5	68.8
Case 08	Low Ind	High	15	18.8	65.8	20.5	68.9
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	20.5	68.9
Case 51	Radial	Ceiling	15	18.8	65.8	20.5	69.0
Case 05	Slot	High	15	18.8	65.8	20.5	69.0
Case 41	Slot	Ceiling x4	15	18.8	65.8	20.5	69.0
Case 40	Radial	Ceiling x4	15	18.8	65.8	20.5	69.0
Case 49	Radial	Ceiling	15	18.8	65.8	20.5	69.0
Case 20	Slot	Ceiling	15	18.8	65.8	20.6	69.0
Case 48	Radial	Ceiling	15	18.8	65.8	20.6	69.1
Case 02	Radial	High	15	18.8	65.8	20.7	69.2
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	20.7	69.3

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room Temp (°C)	Room Temp (°F)
Case 85	Radial	Low	15	17.5	63.5	20.7	69.3
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	20.8	69.4
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	20.8	69.4
Case 65	Low Ind	Low	15	17.5	63.5	20.8	69.5
Case 13	Slot	Low	15	20.7	69.3	20.8	69.5
Case 10	Radial	Ceiling	15	20.7	69.3	20.9	69.7
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	21.1	69.9
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	21.1	70.0
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	21.1	70.0
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	21.1	70.0
Case 14	Low Ind	Ceiling	15	20.7	69.3	21.1	70.0
Case 12	Slot	Ceiling	15	20.7	69.3	21.1	70.0
Case 64	Low Ind	Low	20	18.9	66.0	21.2	70.1
Case 86	Slot	Low	15	17.5	63.5	21.2	70.1
Case 29	Low Ind	Low	5	11	51.8	21.2	70.1
Case 15	Low Ind	Low	15	20.7	69.3	21.2	70.2
Case 68	Low Ind	Low	20	18.9	66.0	21.2	70.2
Case 22	Radial	Low	15	18.8	65.8	21.2	70.2
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	21.3	70.3
Case 82	Radial	2 Door exhausts	15	18.8	65.8	21.3	70.3
Case 11	Radial	Low	15	20.7	69.3	21.3	70.4
Case 31	Radial	Low	15	17.5	63.5	21.4	70.5
Case 83	Slot	2 Door exhausts	15	17.5	63.5	21.4	70.6
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	21.4	70.6
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	21.5	70.7
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	21.6	70.8
Case 57	Radial	Low	15	18.8	65.8	21.7	71.1
Case 23	Slot	Low	15	18.8	65.8	21.8	71.2
Case 58	Slot	High	15	18.8	65.8	21.8	71.2
Case 79	Radial	2 Door exhausts	15	18.8	65.8	21.9	71.5
Case 32	Slot	Low	15	17.5	63.5	22.0	71.5
Case 33	Low Ind	Low	15	17.5	63.5	22.0	71.5
Case 61	Low Ind	Low	15	18.8	65.8	22.0	71.7
Case 03	Radial	Low	15	18.8	65.8	22.1	71.7
Case 80	Slot	2 Door exhausts	15	18.8	65.8	22.1	71.8
Case 24	Low Ind	Low	15	18.8	65.8	22.1	71.8
Case 06	Slot	Low	15	18.8	65.8	22.3	72.1
Case 28	Low Ind	Low	10	16.8	62.2	22.3	72.1
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	22.5	72.4
Case 87	Radial	Low	15	19.2	66.6	22.5	72.4
Case 88	Slot	Low	15	19.2	66.6	22.6	72.6
Case 09	Low Ind	Low	15	18.8	65.8	22.6	72.6
Case 30	Low Ind	Low	20	19.8	67.6	22.6	72.6
Case 89	Low Ind	Low	15	19.2	66.6	22.9	73.3

Table 3.02 Ranking of Cases with respect to Cage Temperature

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage Temp (°C)	Cage Temp (°F)
Case 66	Low Ind	Low	5	6.6	43.9	20.6	69.1
Case 62	Low Ind	Low	5	6.6	43.9	20.9	69.6
Case 35	Slot	Ceiling	15	17.5	63.5	21.3	70.4
Case 34	Radial	Ceiling	15	17.5	63.5	21.4	70.4
Case 36	Low Ind	Ceiling	15	17.5	63.5	21.5	70.6
Case 55	Low Ind	Ceiling	15	18.8	65.8	21.6	70.9
Case 97	Slot	Ceiling	15	17.5	63.5	21.6	71.0
Case 54	Slot	Ceiling	15	18.8	65.8	21.7	71.0
Case 53	Radial	Ceiling	15	18.8	65.8	21.7	71.0
Case 98	Low Ind	Ceiling	15	17.5	63.5	21.7	71.1
Case 19	Radial	Ceiling	15	18.8	65.8	21.7	71.1
Case 96	Radial	Ceiling	15	17.5	63.5	21.8	71.2
Case 94	Slot	Ceiling	15	17.5	63.5	21.9	71.3
Case 67	Low Ind	Low	10	14.8	58.6	21.9	71.4
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	21.9	71.4
Case 60	Low Ind	High	15	18.8	65.8	21.9	71.4
Case 63	Low Ind	Low	10	14.8	58.6	21.9	71.4
Case 90	Radial	Ceiling	15	18.8	65.8	21.9	71.5
Case 95	Low Ind	Ceiling	15	17.5	63.5	21.9	71.5
Case 93	Radial	Ceiling	15	17.5	63.5	21.9	71.5
Case 92	Low Ind	Ceiling	15	18.8	65.8	22.0	71.6
Case 91	Slot	Ceiling	15	18.8	65.8	22.0	71.6
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	22.0	71.6
Case 46	Radial	Ceiling	15	18.8	65.8	22.0	71.6
Case 21	Low Ind	Ceiling	15	18.8	65.8	22.0	71.6
Case 59	Slot	Low	15	18.8	65.8	22.0	71.6
Basecase	Radial	Ceiling	15	18.8	65.8	22.1	71.7
Case 18	Low Ind	Ceiling	15	18.8	65.8	22.1	71.7
Case 45	Radial	Ceiling	15	18.8	65.8	22.1	71.7
Case 17	Slot	Ceiling	15	18.8	65.8	22.1	71.7
Case 20	Slot	Ceiling	15	18.8	65.8	22.1	71.7
Case 47	Radial	Ceiling	15	18.8	65.8	22.1	71.7
Case 78	Low Ind	Ceiling	15	18.8	65.8	22.1	71.8
Case 56	Radial	High	15	18.8	65.8	22.1	71.8
Case 27	Low Ind	Ceiling	15	18.8	65.8	22.1	71.8
Case 48	Radial	Ceiling	15	18.8	65.8	22.1	71.8
Case 76	Radial	Ceiling	15	18.8	65.8	22.1	71.8
Case 26	Slot	Ceiling	15	18.8	65.8	22.1	71.8
Case 77	Slot	Ceiling	15	18.8	65.8	22.1	71.9
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	22.2	71.9
Case 04	Slot	Ceiling	15	18.8	65.8	22.2	71.9
Case 50	Radial	Ceiling	15	18.8	65.8	22.2	71.9
Case 49	Radial	Ceiling	15	18.8	65.8	22.2	71.9
Case 40	Radial	Ceiling x4	15	18.8	65.8	22.2	71.9
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	22.2	71.9
Case 51	Radial	Ceiling	15	18.8	65.8	22.2	71.9
Case 25	Radial	Ceiling	15	18.8	65.8	22.2	72.0
Case 83	Slot	2 Door exhausts	15	17.5	63.5	22.2	72.0
Case 08	Low Ind	High	15	18.8	65.8	22.2	72.0
Case 41	Slot	Ceiling x4	15	18.8	65.8	22.2	72.0
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	22.3	72.1
Case 05	Slot	High	15	18.8	65.8	22.3	72.1
Case 82	Radial	2 Door exhausts	15	18.8	65.8	22.3	72.1
Case 86	Slot	Low	15	17.5	63.5	22.3	72.1

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage Temp (°C)	Cage Temp (°F)
Case 02	Radial	High	15	18.8	65.9	22.3	72.2
Case 85	Radial	Low	15	17.5	63.5	22.4	72.3
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	22.4	72.3
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	22.4	72.3
Case 65	Low Ind	Low	15	17.5	63.5	22.4	72.4
Case 07	Low Ind	Ceiling	15	18.8	65.8	22.5	72.4
Case 52	Radial	Ceiling	15	18.8	65.8	22.5	72.5
Case 22	Radial	Low	15	18.8	65.8	22.5	72.5
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	22.5	72.5
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	22.5	72.6
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	22.6	72.7
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	22.6	72.7
Case 29	Low Ind	Low	5	11	51.8	22.6	72.8
Case 87	Radial	Low	15	19.2	66.6	22.7	72.8
Case 64	Low Ind	Low	20	18.9	66.0	22.7	72.8
Case 31	Radial	Low	15	17.5	63.5	22.7	72.8
Case 23	Slot	Low	15	18.8	65.8	22.7	72.9
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	22.7	72.9
Case 11	Radial	Low	15	20.7	69.3	22.7	72.9
Case 68	Low Ind	Low	20	18.9	66.0	22.8	73.0
Case 13	Slot	Low	15	20.7	69.3	22.8	73.0
Case 14	Low Ind	Ceiling	15	20.7	69.3	22.8	73.0
Case 16	Radial	Ceiling	15	18.8	65.8	22.9	73.1
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	22.9	73.2
Case 32	Slot	Low	15	17.5	63.5	22.9	73.2
Case 12	Slot	Ceiling	15	20.7	69.3	22.9	73.2
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	23.0	73.3
Case 57	Radial	Low	15	18.8	65.8	23.0	73.4
Case 58	Slot	High	15	18.8	65.8	23.1	73.5
Case 79	Radial	2 Door exhausts	15	18.8	65.8	23.1	73.6
Case 61	Low Ind	Low	15	18.8	65.8	23.1	73.6
Case 33	Low Ind	Low	15	17.5	63.5	23.2	73.7
Case 24	Low Ind	Low	15	18.8	65.8	23.2	73.7
Case 80	Slot	2 Door exhausts	15	18.8	65.8	23.2	73.8
Case 10	Radial	Ceiling	15	20.7	69.3	23.2	73.8
Case 15	Low Ind	Low	15	20.7	69.3	23.2	73.8
Case 28	Low Ind	Low	10	16.8	62.2	23.3	74.0
Case 03	Radial	Low	15	18.8	65.8	23.4	74.0
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	23.4	74.1
Case 06	Slot	Low	15	18.8	65.8	23.4	74.2
Case 88	Slot	Low	15	19.2	66.6	23.5	74.4
Case 09	Low Ind	Low	15	18.8	65.8	23.6	74.5
Case 30	Low Ind	Low	20	19.8	67.6	23.6	74.6
Case 89	Low Ind	Low	15	19.2	66.6	23.7	74.6

Table 3.03 Ranking of Cases with respect to Room Relative Humidity

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room RH (percent)
Case 89	Low Ind	Low	15	19.2	66.6	47.1
Case 88	Slot	Low	15	19.2	66.6	48.1
Case 30	Low Ind	Low	20	19.8	67.6	48.2
Case 09	Low Ind	Low	15	18.8	65.8	48.4
Case 87	Radial	Low	15	19.2	66.6	48.4
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	48.7
Case 06	Slot	Low	15	18.8	65.8	49.2
Case 28	Low Ind	Low	10	16.8	62.2	49.5
Case 03	Radial	Low	15	18.8	65.8	49.7
Case 24	Low Ind	Low	15	18.8	65.8	49.8
Case 80	Slot	2 Door exhausts	15	18.8	65.8	49.8
Case 61	Low Ind	Low	15	18.8	65.8	49.8
Case 79	Radial	2 Door exhausts	15	18.8	65.8	50.3
Case 32	Slot	Low	15	17.5	63.5	50.5
Case 58	Slot	High	15	18.8	65.8	50.6
Case 33	Low Ind	Low	15	17.5	63.5	50.7
Case 23	Slot	Low	15	18.8	65.8	50.7
Case 57	Radial	Low	15	18.8	65.8	50.7
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	51.2
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	51.4
Case 11	Radial	Low	15	20.7	69.3	52.0
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	52.2
Case 31	Radial	Low	15	17.5	63.5	52.3
Case 15	Low Ind	Low	15	20.7	69.3	52.3
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	52.3
Case 22	Radial	Low	15	18.8	65.8	52.3
Case 12	Slot	Ceiling	15	20.7	69.3	52.3
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	52.6
Case 83	Slot	2 Door exhausts	15	17.5	63.5	52.6
Case 68	Low Ind	Low	20	18.9	66.0	52.7
Case 14	Low Ind	Ceiling	15	20.7	69.3	52.7
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	52.7
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	52.7
Case 82	Radial	2 Door exhausts	15	18.8	65.8	52.8
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	52.8
Case 64	Low Ind	Low	20	18.9	66.0	52.9
Case 86	Slot	Low	15	17.5	63.5	53.1
Case 10	Radial	Ceiling	15	20.7	69.3	53.1
Case 29	Low Ind	Low	5	11	51.8	53.2
Case 13	Slot	Low	15	20.7	69.3	53.5
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	53.9
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	54.0
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	54.2
Case 02	Radial	High	15	18.8	65.8	54.3
Case 40	Radial	Ceiling x4	15	18.8	65.8	54.4
Case 65	Low Ind	Low	15	17.5	63.5	54.4
Case 48	Radial	Ceiling	15	18.8	65.8	54.5
Case 49	Radial	Ceiling	15	18.8	65.8	54.6
Case 05	Slot	High	15	18.8	65.8	54.6
Case 41	Slot	Ceiling x4	15	18.8	65.8	54.6
Case 85	Radial	Low	15	17.5	63.5	54.7
Case 20	Slot	Ceiling	15	18.8	65.8	54.8
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	54.8
Case 51	Radial	Ceiling	15	18.8	65.8	54.8

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room RH (percent)
Case 50	Radial	Ceiling	15	18.8	65.8	54.9
Case 91	Slot	Ceiling	15	18.8	65.8	55.0
Case 08	Low Ind	High	15	18.8	65.8	55.0
Case 26	Slot	Ceiling	15	18.8	65.8	55.0
Case 59	Slot	Low	15	18.8	65.8	55.0
Case 52	Radial	Ceiling	15	18.8	65.8	55.0
Case 92	Low Ind	Ceiling	15	18.8	65.8	55.0
Case 78	Low Ind	Ceiling	15	18.8	65.8	55.1
Case 04	Slot	Ceiling	15	18.8	65.8	55.1
Case 77	Slot	Ceiling	15	18.8	65.8	55.2
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	55.2
Case 76	Radial	Ceiling	15	18.8	65.8	55.2
Case 21	Low Ind	Ceiling	15	18.8	65.8	55.2
Case 90	Radial	Ceiling	15	18.8	65.8	55.4
Basecase	Radial	Ceiling	15	18.8	65.8	55.4
Case 56	Radial	High	15	18.8	65.8	55.5
Case 47	Radial	Ceiling	15	18.8	65.8	55.5
Case 27	Low Ind	Ceiling	15	18.8	65.8	55.5
Case 25	Radial	Ceiling	15	18.8	65.8	55.6
Case 45	Radial	Ceiling	15	18.8	65.8	55.6
Case 60	Low Ind	High	15	18.8	65.8	55.6
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	55.8
Case 95	Low Ind	Ceiling	15	17.5	63.5	55.9
Case 46	Radial	Ceiling	15	18.8	65.8	55.9
Case 19	Radial	Ceiling	15	18.8	65.8	55.9
Case 93	Radial	Ceiling	15	17.5	63.5	55.9
Case 17	Slot	Ceiling	15	18.8	65.8	56.0
Case 18	Low Ind	Ceiling	15	18.8	65.8	56.0
Case 16	Radial	Ceiling	15	18.8	65.8	56.2
Case 94	Slot	Ceiling	15	17.5	63.5	56.3
Case 07	Low Ind	Ceiling	15	18.8	65.8	56.7
Case 63	Low Ind	Low	10	14.8	58.6	56.8
Case 98	Low ind	Ceiling	15	17.5	63.5	56.9
Case 96	Radial	Ceiling	15	17.5	63.5	57.0
Case 97	Slot	Ceiling	15	17.5	63.5	57.0
Case 67	Low Ind	Low	10	14.8	58.6	57.2
Case 35	Slot	Ceiling	15	17.5	63.5	57.4
Case 55	Low Ind	Ceiling	15	18.8	65.8	57.4
Case 54	Slot	Ceiling	15	18.8	65.8	57.4
Case 53	Radial	Ceiling	15	18.8	65.8	57.5
Case 34	Radial	Ceiling	15	17.5	63.5	57.5
Case 36	Low Ind	Ceiling	15	17.5	63.5	57.7
Case 62	Low Ind	Low	5	6.6	43.9	62.6
Case 66	Low Ind	Low	5	6.6	43.9	64.4

Table 3.04 Ranking of Cases with respect to Cage RH

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage RH (percent)
Case 62	Low Ind	Low	5	6.6	43.9	52.8
Case 66	Low Ind	Low	5	6.6	43.9	53.0
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	53.0
Case 29	Low Ind	Low	5	11	51.8	55.8
Case 87	Radial	Low	15	19.2	66.6	56.3
Case 64	Low Ind	Low	20	18.9	66.0	56.5
Case 23	Slot	Low	15	18.8	65.8	56.9
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	57.1
Case 68	Low Ind	Low	20	18.9	66.0	57.5
Case 32	Slot	Low	15	17.5	63.5	57.5
Case 57	Radial	Low	15	18.8	65.8	58.3
Case 79	Radial	2 Door exhausts	15	18.8	65.8	58.6
Case 33	Low Ind	Low	15	17.5	63.5	58.7
Case 24	Low Ind	Low	15	18.8	65.8	58.7
Case 80	Slot	2 Door exhausts	15	18.8	65.8	59.1
Case 28	Low Ind	Low	10	16.8	62.2	59.1
Case 03	Radial	Low	15	18.8	65.8	60.2
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	60.2
Case 06	Slot	Low	15	18.8	65.8	60.2
Case 88	Slot	Low	15	19.2	66.6	60.4
Case 09	Low Ind	Low	15	18.8	65.8	60.6
Case 30	Low Ind	Low	20	19.8	67.6	60.9
Case 89	Low Ind	Low	15	19.2	66.6	60.9
Case 22	Radial	Low	15	18.8	65.8	61.1
Case 31	Radial	Low	15	17.5	63.5	61.4
Case 58	Slot	High	15	18.8	65.8	61.4
Case 61	Low Ind	Low	15	18.8	65.8	61.6
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	61.6
Case 10	Radial	Ceiling	15	20.7	69.3	61.7
Case 15	Low Ind	Low	15	20.7	69.3	61.7
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	61.8
Case 82	Radial	2 Door exhausts	15	18.8	65.8	61.9
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	61.9
Case 86	Slot	Low	15	17.5	63.5	62.0
Case 02	Radial	High	15	18.8	65.8	62.0
Case 41	Slot	Ceiling x4	15	18.8	65.8	62.3
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	62.3
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	62.4
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	62.4
Case 05	Slot	High	15	18.8	65.8	62.5
Case 20	Slot	Ceiling	15	18.8	65.8	62.6
Case 65	Low Ind	Low	15	17.5	63.5	62.7
Case 04	Slot	Ceiling	15	18.8	65.8	62.7
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	62.8
Case 92	Low Ind	Ceiling	15	18.8	65.8	62.8
Case 85	Radial	Low	15	17.5	63.5	62.8
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	62.9
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	62.9
Case 90	Radial	Ceiling	15	18.8	65.8	63.3
Case 91	Slot	Ceiling	15	18.8	65.8	63.4
Case 11	Radial	Low	15	20.7	69.3	63.6
Case 12	Slot	Ceiling	15	20.7	69.3	63.6
Case 50	Radial	Ceiling	15	18.8	65.8	63.7
Case 18	Low Ind	Ceiling	15	18.8	65.8	63.8

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage RH (percent)
Case 08	Low Ind	High	15	18.8	65.8	63.8
Case 17	Slot	Ceiling	15	18.8	65.8	63.9
Case 16	Radial	Ceiling	15	18.8	65.8	64.0
Case 76	Radial	Ceiling	15	18.8	65.8	64.1
Case 21	Low Ind	Ceiling	15	18.8	65.8	64.1
Case 95	Low Ind	Ceiling	15	17.5	63.5	64.1
Case 77	Slot	Ceiling	15	18.8	65.8	64.2
Case 14	Low Ind	Ceiling	15	20.7	69.3	64.2
Case 97	Slot	Ceiling	15	17.5	63.5	64.2
Case 94	Slot	Ceiling	15	17.5	63.5	64.4
Case 56	Radial	High	15	18.8	65.8	64.4
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	64.6
Case 19	Radial	Ceiling	15	18.8	65.8	64.6
Case 78	Low Ind	Ceiling	15	18.8	65.8	64.7
Case 52	Radial	Ceiling	15	18.8	65.8	64.8
Case 40	Radial	Ceiling x4	15	18.8	65.8	64.8
Case 45	Radial	Ceiling	15	18.8	65.8	64.9
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	64.9
Case 63	Low Ind	Low	10	14.8	58.6	64.9
Case 93	Radial	Ceiling	15	17.5	63.5	65.0
Case 47	Radial	Ceiling	15	18.8	65.8	65.1
Case 49	Radial	Ceiling	15	18.8	65.8	65.2
Case 46	Radial	Ceiling	15	18.8	65.8	65.2
Case 51	Radial	Ceiling	15	18.8	65.8	65.3
Case 35	Slot	Ceiling	15	17.5	63.5	65.5
Case 67	Low Ind	Low	10	14.8	58.6	65.8
Case 98	Low ind	Ceiling	15	17.5	63.5	65.8
Case 96	Radial	Ceiling	15	17.5	63.5	65.8
Case 54	Slot	Ceiling	15	18.8	65.8	66.0
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	66.0
Case 48	Radial	Ceiling	15	18.8	65.8	66.1
Case 07	Low Ind	Ceiling	15	18.8	65.8	66.4
Case 13	Slot	Low	15	20.7	69.3	66.5
Case 36	Low Ind	Ceiling	15	17.5	63.5	66.5
Basecase	Radial	Ceiling	15	18.8	65.8	66.8
Case 83	Slot	2 Door exhausts	15	17.5	63.5	66.8
Case 59	Slot	Low	15	18.8	65.8	66.9
Case 34	Radial	Ceiling	15	17.5	63.5	67.2
Case 55	Low Ind	Ceiling	15	18.8	65.8	67.8
Case 53	Radial	Ceiling	15	18.8	65.8	68.8
Case 60	Low Ind	High	15	18.8	65.8	69.1
Case 25	Radial	Ceiling	15	18.8	65.8	73.0
Case 27	Low Ind	Ceiling	15	18.8	65.8	74.8
Case 26	Slot	Ceiling	15	18.8	65.8	81.2

Table 3.05 Ranking of Cases with respect to Room CO₂

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room CO ₂ (ppm)
Case 59	Slot	Low	15	18.8	65.8	15
Case 12	Slot	Ceiling	15	20.7	69.3	17
Case 40	Radial	Ceiling x4	15	18.8	65.8	21
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	24
Case 10	Radial	Ceiling	15	20.7	69.3	29
Case 26	Slot	Ceiling	15	18.8	65.8	35
Basecase	Radial	Ceiling	15	18.8	65.8	36
Case 13	Slot	Low	15	20.7	69.3	37
Case 16	Radial	Ceiling	15	18.8	65.8	37
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	37
Case 47	Radial	Ceiling	15	18.8	65.8	40
Case 92	Low Ind	Ceiling	15	18.8	65.8	41
Case 46	Radial	Ceiling	15	18.8	65.8	43
Case 87	Radial	Low	15	19.2	66.6	45
Case 11	Radial	Low	15	20.7	69.3	48
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	48
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	48
Case 88	Slot	Low	15	19.2	66.6	48
Case 15	Low Ind	Low	15	20.7	69.3	48
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	48
Case 05	Slot	High	15	18.8	65.8	49
Case 77	Slot	Ceiling	15	18.8	65.8	50
Case 41	Slot	Ceiling x4	15	18.8	65.8	51
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	51
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	51
Case 49	Radial	Ceiling	15	18.8	65.8	52
Case 14	Low Ind	Ceiling	15	20.7	69.3	52
Case 45	Radial	Ceiling	15	18.8	65.8	52
Case 50	Radial	Ceiling	15	18.8	65.8	55
Case 76	Radial	Ceiling	15	18.8	65.8	55
Case 78	Low Ind	Ceiling	15	18.8	65.8	55
Case 60	Low Ind	High	15	18.8	65.8	57
Case 07	Low Ind	Ceiling	15	18.8	65.8	57
Case 55	Low Ind	Ceiling	15	18.8	65.8	57
Case 91	Slot	Ceiling	15	18.8	65.8	57
Case 57	Radial	Low	15	18.8	65.8	57
Case 53	Radial	Ceiling	15	18.8	65.8	58
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	59
Case 19	Radial	Ceiling	15	18.8	65.8	59
Case 54	Slot	Ceiling	15	18.8	65.8	60
Case 25	Radial	Ceiling	15	18.8	65.8	60
Case 22	Radial	Low	15	18.8	65.8	61
Case 27	Low Ind	Ceiling	15	18.8	65.8	61
Case 21	Low Ind	Ceiling	15	18.8	65.8	62
Case 04	Slot	Ceiling	15	18.8	65.8	62
Case 89	Low Ind	Low	15	19.2	66.6	62
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	62
Case 23	Slot	Low	15	18.8	65.8	63
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	63
Case 30	Low Ind	Low	20	19.8	67.6	64
Case 08	Low Ind	High	15	18.8	65.8	64
Case 03	Radial	Low	15	18.8	65.8	64
Case 48	Radial	Ceiling	15	18.8	65.8	65
Case 02	Radial	High	15	18.8	65.8	65

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room CO ₂ (ppm)
Case 52	Radial	Ceiling	15	18.8	65.8	65
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	65
Case 51	Radial	Ceiling	15	18.8	65.8	67
Case 58	Slot	High	15	18.8	65.8	68
Case 61	Low Ind	Low	15	18.8	65.8	69
Case 56	Radial	High	15	18.8	65.8	69
Case 95	Low Ind	Ceiling	15	17.5	63.5	69
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	71
Case 06	Slot	Low	15	18.8	65.8	72
Case 90	Radial	Ceiling	15	18.8	65.8	72
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	74
Case 20	Slot	Ceiling	15	18.8	65.8	75
Case 17	Slot	Ceiling	15	18.8	65.8	78
Case 18	Low Ind	Ceiling	15	18.8	65.8	79
Case 79	Radial	2 Door exhausts	15	18.8	65.8	81
Case 24	Low Ind	Low	15	18.8	65.8	81
Case 98	Low ind	Ceiling	15	17.5	63.5	83
Case 93	Radial	Ceiling	15	17.5	63.5	86
Case 09	Low Ind	Low	15	18.8	65.8	88
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	89
Case 80	Slot	2 Door exhausts	15	18.8	65.8	90
Case 68	Low Ind	Low	20	18.9	66.0	93
Case 64	Low Ind	Low	20	18.9	66.0	93
Case 96	Radial	Ceiling	15	17.5	63.5	100
Case 31	Radial	Low	15	17.5	63.5	107
Case 97	Slot	Ceiling	15	17.5	63.5	111
Case 28	Low Ind	Low	10	16.8	62.2	113
Case 82	Radial	2 Door exhausts	15	18.8	65.8	116
Case 94	Slot	Ceiling	15	17.5	63.5	117
Case 35	Slot	Ceiling	15	17.5	63.5	122
Case 86	Slot	Low	15	17.5	63.5	124
Case 32	Slot	Low	15	17.5	63.5	125
Case 85	Radial	Low	15	17.5	63.5	132
Case 65	Low Ind	Low	15	17.5	63.5	133
Case 36	Low Ind	Ceiling	15	17.5	63.5	134
Case 34	Radial	Ceiling	15	17.5	63.5	136
Case 29	Low Ind	Low	5	11	51.8	140
Case 33	Low Ind	Low	15	17.5	63.5	143
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	152
Case 83	Slot	2 Door exhausts	15	17.5	63.5	167
Case 67	Low Ind	Low	10	14.8	58.6	201
Case 63	Low Ind	Low	10	14.8	58.6	215
Case 66	Low Ind	Low	5	6.6	43.9	318
Case 62	Low Ind	Low	5	6.6	43.9	342

Table 3.06 Ranking of Cases with respect to Cage CO₂

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage CO ₂ (ppm)
Case 87	Radial	Low	15	19.2	66.6	1391
Case 88	Slot	Low	15	19.2	66.6	1550
Case 03	Radial	Low	15	18.8	65.8	1568
Case 92	Low Ind	Ceiling	15	18.8	65.8	1631
Case 89	Low Ind	Low	15	19.2	66.6	1636
Case 79	Radial	2 Door exhausts	15	18.8	65.8	1647
Case 23	Slot	Low	15	18.8	65.8	1652
Case 06	Slot	Low	15	18.8	65.8	1652
Case 20	Slot	Ceiling	15	18.8	65.8	1656
Case 52	Radial	Ceiling	15	18.8	65.8	1665
Case 22	Radial	Low	15	18.8	65.8	1665
Case 82	Radial	2 Door exhausts	15	18.8	65.8	1667
Case 30	Low Ind	Low	20	19.8	67.6	1667
Case 90	Radial	Ceiling	15	18.8	65.8	1673
Case 41	Slot	Ceiling x4	15	18.8	65.8	1690
Case 02	Radial	High	15	18.8	65.8	1703
Case 80	Slot	2 Door exhausts	15	18.8	65.8	1707
Case 04	Slot	Ceiling	15	18.8	65.8	1709
Case 91	Slot	Ceiling	15	18.8	65.8	1709
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	1715
Case 97	Slot	Ceiling	15	17.5	63.5	1725
Case 09	Low Ind	Low	15	18.8	65.8	1725
Case 19	Radial	Ceiling	15	18.8	65.8	1725
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	1728
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	1741
Case 05	Slot	High	15	18.8	65.8	1742
Case 32	Slot	Low	15	17.5	63.5	1747
Case 28	Low Ind	Low	10	16.8	62.2	1749
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	1750
Case 83	Slot	2 Door exhausts	15	17.5	63.5	1756
Case 94	Slot	Ceiling	15	17.5	63.5	1757
Case 35	Slot	Ceiling	15	17.5	63.5	1761
Case 29	Low Ind	Low	5	11	51.8	1764
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	1776
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	1790
Case 18	Low Ind	Ceiling	15	18.8	65.8	1791
Case 64	Low Ind	Low	20	18.9	66.0	1808
Case 21	Low Ind	Ceiling	15	18.8	65.8	1808
Case 17	Slot	Ceiling	15	18.8	65.8	1815
Case 95	Low Ind	Ceiling	15	17.5	63.5	1822
Case 93	Radial	Ceiling	15	17.5	63.5	1822
Case 68	Low Ind	Low	20	18.9	66.0	1838
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	1839
Case 50	Radial	Ceiling	15	18.8	65.8	1840
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	1848
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	1853
Case 57	Radial	Low	15	18.8	65.8	1855
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	1855
Case 76	Radial	Ceiling	15	18.8	65.8	1857
Case 54	Slot	Ceiling	15	18.8	65.8	1869
Case 08	Low Ind	High	15	18.8	65.8	1871
Case 36	Low Ind	Ceiling	15	17.5	63.5	1878
Case 77	Slot	Ceiling	15	18.8	65.8	1881
Case 24	Low Ind	Low	15	18.8	65.8	1883

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage CO ₂ (ppm)
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	1884
Case 56	Radial	High	15	18.8	65.8	1886
Case 34	Radial	Ceiling	15	17.5	63.5	1896
Case 86	Slot	Low	15	17.5	63.5	1917
Case 78	Low Ind	Ceiling	15	18.8	65.8	1919
Case 45	Radial	Ceiling	15	18.8	65.8	1929
Case 85	Radial	Low	15	17.5	63.5	1930
Case 31	Radial	Low	15	17.5	63.5	1938
Case 46	Radial	Ceiling	15	18.8	65.8	1943
Case 98	Low Ind	Ceiling	15	17.5	63.5	1955
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	1955
Case 96	Radial	Ceiling	15	17.5	63.5	1957
Case 47	Radial	Ceiling	15	18.8	65.8	1961
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	1966
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	1968
Case 33	Low Ind	Low	15	17.5	63.5	1974
Case 40	Radial	Ceiling x4	15	18.8	65.8	1975
Case 58	Slot	High	15	18.8	65.8	1990
Case 65	Low Ind	Low	15	17.5	63.5	2002
Case 49	Radial	Ceiling	15	18.8	65.8	2025
Case 55	Low Ind	Ceiling	15	18.8	65.8	2039
Case 61	Low Ind	Low	15	18.8	65.8	2042
Case 51	Radial	Ceiling	15	18.8	65.8	2045
Case 63	Low Ind	Low	10	14.8	58.6	2081
Case 48	Radial	Ceiling	15	18.8	65.8	2099
Case 11	Radial	Low	15	20.7	69.3	2118
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	2118
Case 10	Radial	Ceiling	15	20.7	69.3	2119
Case 15	Low Ind	Low	15	20.7	69.3	2119
Case 67	Low Ind	Low	10	14.8	58.6	2144
Basecase	Radial	Ceiling	15	18.8	65.8	2158
Case 59	Slot	Low	15	18.8	65.8	2161
Case 12	Slot	Ceiling	15	20.7	69.3	2208
Case 53	Radial	Ceiling	15	18.8	65.8	2212
Case 16	Radial	Ceiling	15	18.8	65.8	2213
Case 14	Low Ind	Ceiling	15	20.7	69.3	2215
Case 66	Low Ind	Low	5	6.6	43.9	2318
Case 07	Low Ind	Ceiling	15	18.8	65.8	2321
Case 62	Low Ind	Low	5	6.6	43.9	2325
Case 60	Low Ind	High	15	18.8	65.8	2354
Case 13	Slot	Low	15	20.7	69.3	2491
Case 25	Radial	Ceiling	15	18.8	65.8	3008
Case 27	Low Ind	Ceiling	15	18.8	65.8	3171
Case 26	Slot	Ceiling	15	18.8	65.8	3975

Table 3.07 Ranking of Cases with respect to Room NH₃

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room NH ₃ (day 4) (ppm)
Case 59	Slot	Low	15	18.8	65.8	0.04
Case 12	Slot	Ceiling	15	20.7	69.3	0.04
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	0.06
Case 40	Radial	Ceiling x4	15	18.8	65.8	0.06
Case 10	Radial	Ceiling	15	20.7	69.3	0.07
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	0.09
Case 16	Radial	Ceiling	15	18.8	65.8	0.10
Case 87	Radial	Low	15	19.2	66.6	0.10
Case 92	Low Ind	Ceiling	15	18.8	65.8	0.10
Basecase	Radial	Ceiling	15	18.8	65.8	0.11
Case 13	Slot	Low	15	20.7	69.3	0.11
Case 88	Slot	Low	15	19.2	66.6	0.11
Case 47	Radial	Ceiling	15	18.8	65.8	0.11
Case 15	Low Ind	Low	15	20.7	69.3	0.11
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	0.11
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	0.11
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	0.12
Case 46	Radial	Ceiling	15	18.8	65.8	0.12
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	0.12
Case 05	Slot	High	15	18.8	65.8	0.12
Case 41	Slot	Ceiling x4	15	18.8	65.8	0.12
Case 11	Radial	Low	15	20.7	69.3	0.12
Case 57	Radial	Low	15	18.8	65.8	0.13
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	0.13
Case 77	Slot	Ceiling	15	18.8	65.8	0.13
Case 14	Low Ind	Ceiling	15	20.7	69.3	0.14
Case 22	Radial	Low	15	18.8	65.8	0.14
Case 89	Low Ind	Low	15	19.2	66.6	0.14
Case 50	Radial	Ceiling	15	18.8	65.8	0.14
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	0.14
Case 23	Slot	Low	15	18.8	65.8	0.14
Case 45	Radial	Ceiling	15	18.8	65.8	0.14
Case 49	Radial	Ceiling	15	18.8	65.8	0.14
Case 30	Low Ind	Low	20	19.8	67.6	0.14
Case 03	Radial	Low	15	18.8	65.8	0.14
Case 76	Radial	Ceiling	15	18.8	65.8	0.14
Case 91	Slot	Ceiling	15	18.8	65.8	0.14
Case 78	Low Ind	Ceiling	15	18.8	65.8	0.15
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	0.15
Case 04	Slot	Ceiling	15	18.8	65.8	0.15
Case 02	Radial	High	15	18.8	65.8	0.15
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	0.16
Case 58	Slot	High	15	18.8	65.8	0.16
Case 19	Radial	Ceiling	15	18.8	65.8	0.16
Case 61	Low Ind	Low	15	18.8	65.8	0.16
Case 26	Slot	Ceiling	15	18.8	65.8	0.16
Case 06	Slot	Low	15	18.8	65.8	0.16
Case 21	Low Ind	Ceiling	15	18.8	65.8	0.16
Case 07	Low Ind	Ceiling	15	18.8	65.8	0.16
Case 08	Low Ind	High	15	18.8	65.8	0.16
Case 54	Slot	Ceiling	15	18.8	65.8	0.17
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	0.17
Case 55	Low Ind	Ceiling	15	18.8	65.8	0.17
Case 52	Radial	Ceiling	15	18.8	65.8	0.18

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Room NH ₃ (day 4) (ppm)
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	0.18
Case 90	Radial	Ceiling	15	18.8	65.8	0.18
Case 60	Low Ind	High	15	18.8	65.8	0.18
Case 95	Low Ind	Ceiling	15	17.5	63.5	0.18
Case 20	Slot	Ceiling	15	18.8	65.8	0.18
Case 79	Radial	2 Door exhausts	15	18.8	65.8	0.18
Case 24	Low Ind	Low	15	18.8	65.8	0.18
Case 56	Radial	High	15	18.8	65.8	0.18
Case 48	Radial	Ceiling	15	18.8	65.8	0.18
Case 51	Radial	Ceiling	15	18.8	65.8	0.18
Case 53	Radial	Ceiling	15	18.8	65.8	0.18
Case 09	Low Ind	Low	15	18.8	65.8	0.20
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	0.20
Case 17	Slot	Ceiling	15	18.8	65.8	0.20
Case 80	Slot	2 Door exhausts	15	18.8	65.8	0.20
Case 18	Low Ind	Ceiling	15	18.8	65.8	0.20
Case 68	Low Ind	Low	20	18.9	66.0	0.21
Case 64	Low Ind	Low	20	18.9	66.0	0.21
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	0.21
Case 25	Radial	Ceiling	15	18.8	65.8	0.22
Case 98	Low ind	Ceiling	15	17.5	63.5	0.23
Case 93	Radial	Ceiling	15	17.5	63.5	0.24
Case 27	Low Ind	Ceiling	15	18.8	65.8	0.24
Case 31	Radial	Low	15	17.5	63.5	0.24
Case 28	Low Ind	Low	10	16.8	62.2	0.25
Case 82	Radial	2 Door exhausts	15	18.8	65.8	0.27
Case 32	Slot	Low	15	17.5	63.5	0.28
Case 96	Radial	Ceiling	15	17.5	63.5	0.28
Case 97	Slot	Ceiling	15	17.5	63.5	0.29
Case 86	Slot	Low	15	17.5	63.5	0.29
Case 94	Slot	Ceiling	15	17.5	63.5	0.31
Case 29	Low Ind	Low	5	11	51.8	0.32
Case 33	Low Ind	Low	15	17.5	63.5	0.32
Case 85	Radial	Low	15	17.5	63.5	0.33
Case 65	Low Ind	Low	15	17.5	63.5	0.33
Case 35	Slot	Ceiling	15	17.5	63.5	0.34
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	0.34
Case 36	Low Ind	Ceiling	15	17.5	63.5	0.39
Case 34	Radial	Ceiling	15	17.5	63.5	0.41
Case 83	Slot	2 Door exhausts	15	17.5	63.5	0.49
Case 67	Low Ind	Low	10	14.8	58.6	0.57
Case 63	Low Ind	Low	10	14.8	58.6	0.58
Case 66	Low Ind	Low	5	6.6	43.9	0.72
Case 62	Low Ind	Low	5	6.6	43.9	0.77

Table 3.08 Ranking of Cases with respect to Cage NH₃ (Day 4)

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage NH ₃ (day 4) (ppm)
Case 87	Radial	Low	15	19.2	66.6	3.13
Case 88	Slot	Low	15	19.2	66.6	3.49
Case 03	Radial	Low	15	18.8	65.8	3.53
Case 89	Low Ind	Low	15	19.2	66.6	3.68
Case 79	Radial	2 Door exhausts	15	18.8	65.8	3.70
Case 23	Slot	Low	15	18.8	65.8	3.71
Case 06	Slot	Low	15	18.8	65.8	3.72
Case 30	Low Ind	Low	20	19.8	67.6	3.75
Case 22	Radial	Low	15	18.8	65.8	3.77
Case 80	Slot	2 Door exhausts	15	18.8	65.8	3.84
Case 09	Low Ind	Low	15	18.8	65.8	3.88
Case 81	Low Ind	2 Door exhausts	15	18.8	65.8	3.92
Case 82	Radial	2 Door exhausts	15	18.8	65.8	3.92
Case 32	Slot	Low	15	17.5	63.5	3.93
Case 28	Low Ind	Low	10	16.8	62.2	3.93
Case 69	Radial	High x4 / Low x4	15	18.8	65.8	3.94
Case 29	Low Ind	Low	5	11	51.8	3.97
Case 92	Low Ind	Ceiling	15	18.8	65.8	4.02
Case 02	Radial	High	15	18.8	65.8	4.03
Case 20	Slot	Ceiling	15	18.8	65.8	4.04
Case 41	Slot	Ceiling x4	15	18.8	65.8	4.06
Case 64	Low Ind	Low	20	18.9	66.0	4.07
Case 37	Radial	Ceiling/Low 50/50	15	18.8	65.8	4.13
Case 68	Low Ind	Low	20	18.9	66.0	4.13
Case 84	Low Ind	2 Door exhausts	15	17.5	63.5	4.17
Case 57	Radial	Low	15	18.8	65.8	4.17
Case 04	Slot	Ceiling	15	18.8	65.8	4.18
Case 72	Radial	High x4 / Low x2	15	18.8	65.8	4.22
Case 90	Radial	Ceiling	15	18.8	65.8	4.22
Case 05	Slot	High	15	18.8	65.8	4.23
Case 24	Low Ind	Low	15	18.8	65.8	4.24
Case 42	Low Ind	Ceiling x4	15	18.8	65.8	4.25
Case 38	Slot	Ceiling/Low 50/50	15	18.8	65.8	4.28
Case 91	Slot	Ceiling	15	18.8	65.8	4.33
Case 33	Low Ind	Low	15	17.5	63.5	4.44
Case 31	Radial	Low	15	17.5	63.5	4.45
Case 52	Radial	Ceiling	15	18.8	65.8	4.49
Case 74	Low Ind	High x4 / Low x2	15	18.8	65.8	4.53
Case 97	Slot	Ceiling	15	17.5	63.5	4.54
Case 86	Slot	Low	15	17.5	63.5	4.54
Case 71	Low Ind	High x4 / Low x4	15	18.8	65.8	4.56
Case 58	Slot	High	15	18.8	65.8	4.58
Case 39	Low Ind	Ceiling/Low 50/50	15	18.8	65.8	4.58
Case 70	Slot	High x4 / Low x4	15	18.8	65.8	4.58
Case 19	Radial	Ceiling	15	18.8	65.8	4.61
Case 18	Low Ind	Ceiling	15	18.8	65.8	4.62
Case 94	Slot	Ceiling	15	17.5	63.5	4.66
Case 17	Slot	Ceiling	15	18.8	65.8	4.71
Case 61	Low Ind	Low	15	18.8	65.8	4.73
Case 21	Low Ind	Ceiling	15	18.8	65.8	4.73
Case 50	Radial	Ceiling	15	18.8	65.8	4.73
Case 85	Radial	Low	15	17.5	63.5	4.76
Case 95	Low Ind	Ceiling	15	17.5	63.5	4.77

Case Name	Supply Diffuser Type	Exhaust Location and Number	Supply ACH	Supply Temperature (°C)	Supply Temperature (°F)	Cage NH ₃ (day 4) (ppm)
Case 08	Low Ind	High	15	18.8	65.8	4.83
Case 76	Radial	Ceiling	15	18.8	65.8	4.85
Case 73	Slot	High x4 / Low x2	15	18.8	65.8	4.87
Case 65	Low Ind	Low	15	17.5	63.5	4.90
Case 35	Slot	Ceiling	15	17.5	63.5	4.90
Case 77	Slot	Ceiling	15	18.8	65.8	4.94
Case 10	Radial	Ceiling	15	20.7	69.3	4.94
Case 15	Low Ind	Low	15	20.7	69.3	4.94
Case 43	Low Ind (rot 90°)	Ceiling	15	18.8	65.8	4.96
Case 93	Radial	Ceiling	15	17.5	63.5	4.97
Case 75	Radial	Ceiling/Low 50/50	15	18.8	65.8	4.98
Case 56	Radial	High	15	18.8	65.8	5.01
Case 83	Slot	2 Door exhausts	15	17.5	63.5	5.15
Case 78	Low Ind	Ceiling	15	18.8	65.8	5.16
Case 66	Low Ind	Low	5	6.6	43.9	5.21
Case 45	Radial	Ceiling	15	18.8	65.8	5.22
Case 62	Low Ind	Low	5	6.6	43.9	5.23
Case 54	Slot	Ceiling	15	18.8	65.8	5.32
Case 40	Radial	Ceiling x4	15	18.8	65.8	5.33
Case 46	Radial	Ceiling	15	18.8	65.8	5.35
Case 47	Radial	Ceiling	15	18.8	65.8	5.36
Case 11	Radial	Low	15	20.7	69.3	5.42
Case 36	Low Ind	Ceiling	15	17.5	63.5	5.44
Case 98	Low ind	Ceiling	15	17.5	63.5	5.50
Case 96	Radial	Ceiling	15	17.5	63.5	5.51
Case 49	Radial	Ceiling	15	18.8	65.8	5.56
Case 51	Radial	Ceiling	15	18.8	65.8	5.64
Case 63	Low Ind	Low	10	14.8	58.6	5.64
Case 12	Slot	Ceiling	15	20.7	69.3	5.66
Case 34	Radial	Ceiling	15	17.5	63.5	5.66
Case 16	Radial	Ceiling	15	18.8	65.8	5.76
Case 14	Low Ind	Ceiling	15	20.7	69.3	5.82
Case 48	Radial	Ceiling	15	18.8	65.8	5.98
Case 44	Radial (rot 90°)	Ceiling	15	18.8	65.8	6.03
Case 67	Low Ind	Low	10	14.8	58.6	6.03
Case 55	Low Ind	Ceiling	15	18.8	65.8	6.22
Basecase	Radial	Ceiling	15	18.8	65.8	6.33
Case 59	Slot	Low	15	18.8	65.8	6.38
Case 07	Low Ind	Ceiling	15	18.8	65.8	6.71
Case 53	Radial	Ceiling	15	18.8	65.8	7.02
Case 13	Slot	Low	15	20.7	69.3	7.21
Case 60	Low Ind	High	15	18.8	65.8	7.56
Case 25	Radial	Ceiling	15	18.8	65.8	11.05
Case 27	Low Ind	Ceiling	15	18.8	65.8	12.31
Case 26	Slot	Ceiling	15	18.8	65.8	18.42

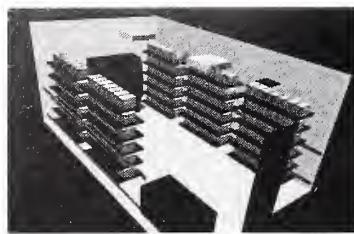
4. WHOLE ROOM SIMULATION DATABASE

4.1 Description of Simulation Data Entry

The first page contains a listing of the room geometry and ventilation configuration together with a picture. Summary result data is then presented for both average rack and room breathing zones. Temperature and CO₂ are presented as single figures whilst NH₃ values are shown over a ten day period. Please refer to Volume I: Section 4.1.2.8.2 for an explanation of the relationship between NH₃ generation rates and cage relative humidity.

The second page shows three histogram population distributions of temperature, contamination (concentration) and relative humidity in the cage occupied zone of all cages in the room. The histograms show the number of cages (frequency) which have values that fall in the range between two values marked on the horizontal axis with the upper-value indicated. For example, in the sample histogram on the next page the column labeled 22.2 indicates that just over 40 cages have temperatures between 22°C and 22.2°C.

Basecase						Room cage and ventilation arrangement	
Description							
Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH%	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH%		
Radial	18.8	61%	Ceiling	22	50%		
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfu		
Room ACH 15	On wall	Single	1055	21100 gr			
Cage Condition							
Top On							



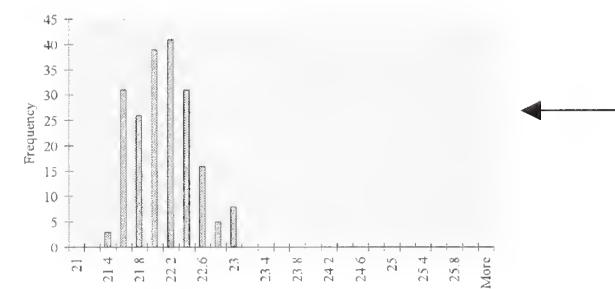
Room cage and ventilation arrangement

Analysis Results									
Cage Occupied Zone									
Temperature									RH
°C	°F								
Mean	22.06	71.70	2158	66.78%					
S.D.	0.40	0.72	359	2.60%					
Max.	22.99	73.38	3133	75.06%					
Cage Occupied Zone NH ₃ (ppm)									
Day	1	2	3	4	5	6	7	8	9
Mean	11.5	21.8	3.37	6.33	10.66	15.82	23.78	29.51	35.35
Max.	1.67	3.17	4.89	9.19	15.47	22.96	34.53	42.84	51.32
Day	10								
Mean									
Max.									

Room geometry

Room Breathing Zone									
Cage Occupied Zone									
Temperature									RH
°C	°F								
Mean	20.291	68.52	36	55.37%					
S.D.	0.46	0.82	20						
Max.	21.78	71.20	137						
Room Breathing Zone NH ₃ (ppm)									
Day	1	2	3	4	5	6	7	8	9
Mean	0.02	0.04	0.06	0.11	0.18	0.26	0.40	0.49	0.59
Max.	0.07	0.14	0.21	0.40	0.68	1.01	1.51	1.88	2.25
Day	10								
Mean									
Max.									

Cage occupied zone summary result data



Sample histogram population distribution

4.2 Simulation Data Entries

The following section presents data entries for each of the CFD animal research facility simulations.

Casename

Basecase

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
On wall	Single	1050	21000 gr		

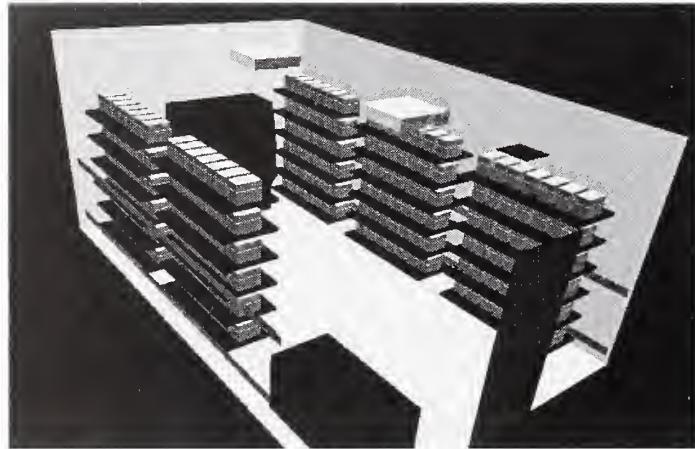
Room

ACH

15

Cage Condition

Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.06	71.70	2158	66.78%
S.D.	0.40	0.72	359	2.60%
Max.	22.99	73.38	3133	75.06%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.15	2.18	3.37	6.33	10.66	15.82	23.78	29.51	35.35	38.09
Max.	1.67	3.17	4.89	9.19	15.47	22.96	34.53	42.84	51.32	55.30

Room Breathing Zone

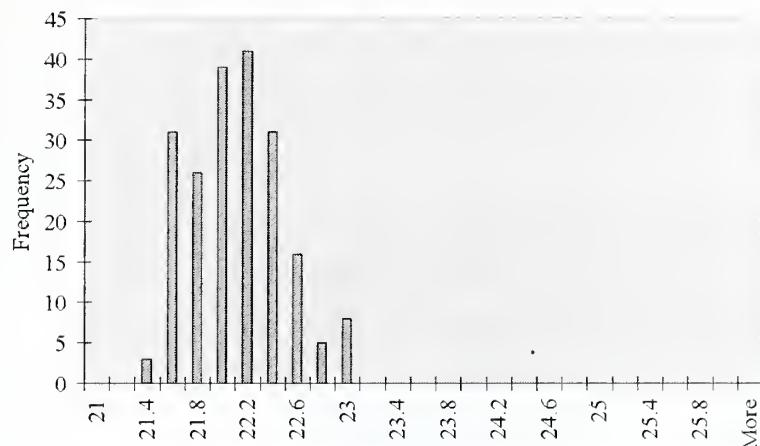
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.291	68.52	36	55.37%
S.D.	0.46	0.82	20	
Max.	21.78	71.20	137	

Room Breathing Zone NH₃ (ppm)

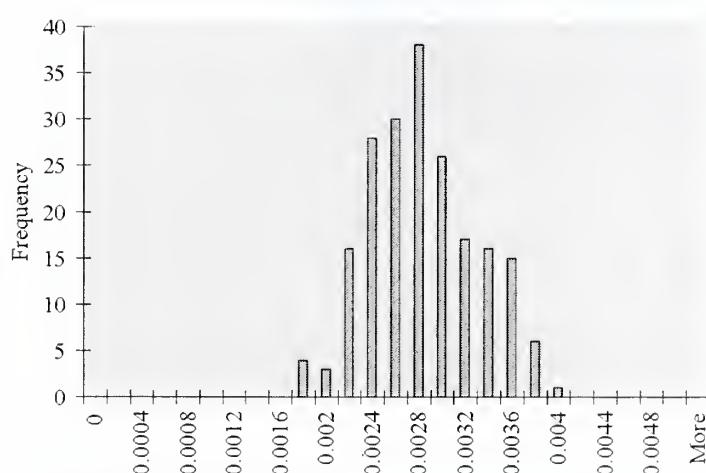
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.11	0.18	0.26	0.40	0.49	0.59	0.63
Max.	0.07	0.14	0.21	0.40	0.68	1.01	1.51	1.88	2.25	2.43

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



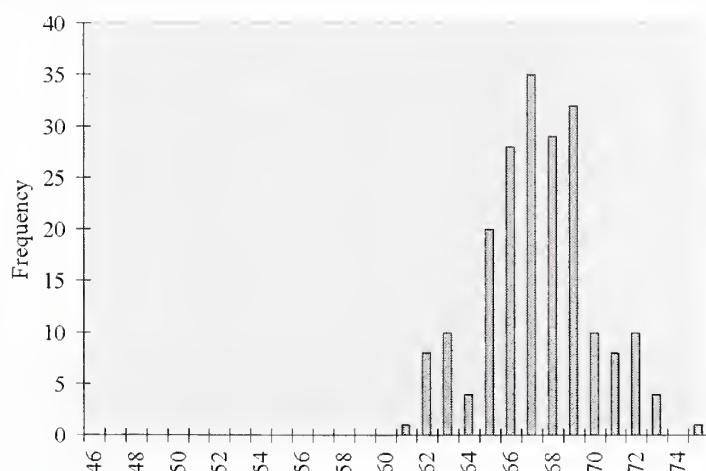
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	418
2	785000	795
3	785000	1225
4	785000	1922
5	785000	2848
6	785000	3443
7	785000	8409
8	785000	8483
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

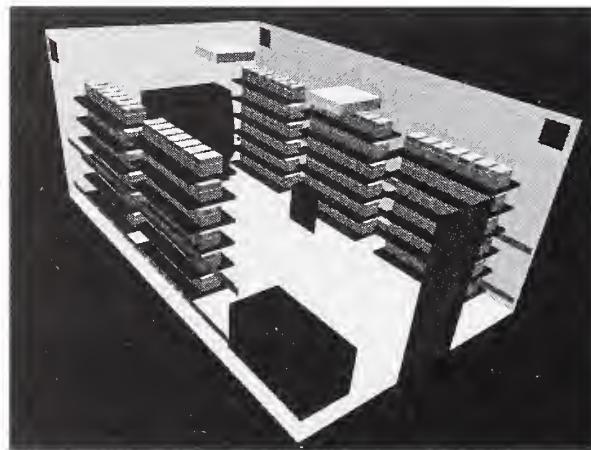
Case 02

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	High	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On



Analysis Results

Cage Occupied Zone

	Temperature °C	CO ₂ (ppm)	RH
Mean	22.33	72.20	1703
S.D.	0.27	0.48	321
Max.	23.23	73.82	2478

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.89	1.72	2.66	4.03	5.92	8.35	11.72	15.45	19.99	25.01
Max.	1.29	2.51	3.87	5.87	8.61	12.14	17.05	22.48	29.08	36.39

Room Breathing Zone

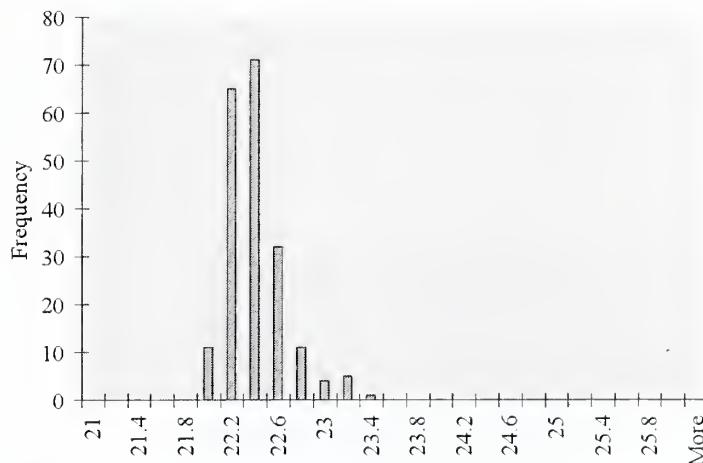
	Temperature °C	CO ₂ (ppm)	RH
Mean	20.69	69.23	65
S.D.	0.25	0.44	22
Max.	21.60	70.89	180

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.07	0.10	0.15	0.23	0.32	0.45	0.59	0.76	0.95
Max.	0.09	0.18	0.28	0.43	0.63	0.88	1.24	1.64	2.12	2.65

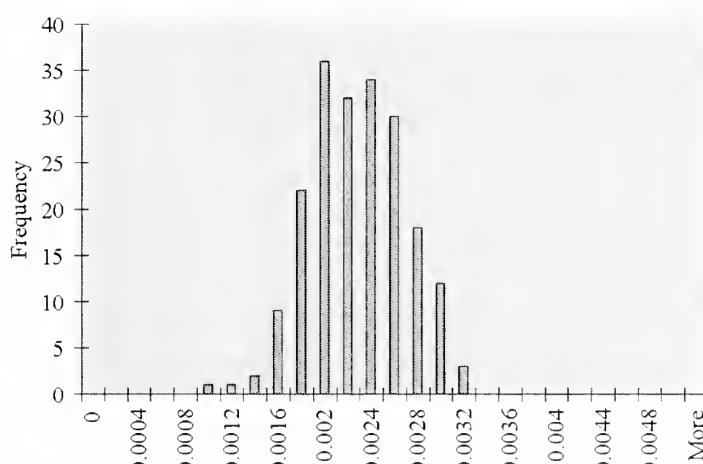
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



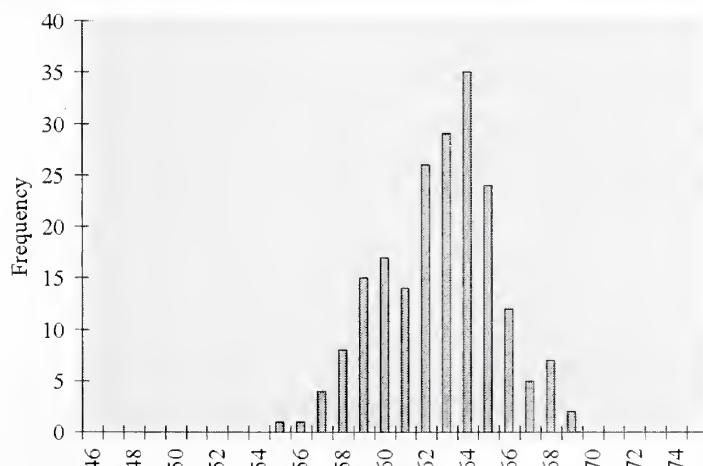
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	410
2	785000	795
3	785000	1225
4	785000	1860
5	785000	2727
6	785000	3847
7	785000	5401
8	785000	7122
9	785000	9214
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



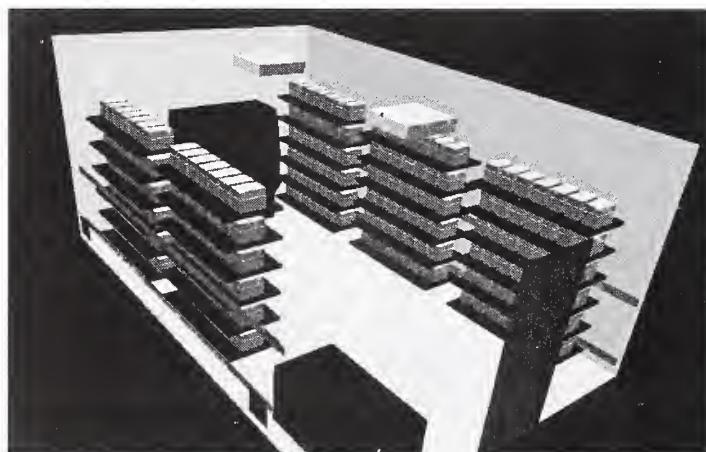
Casename

Case 03**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.36	74.05	1568	57.15%
S.D.	0.48	0.87	343	3.00%
Max.	24.58	76.25	2581	64.65%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.82	1.59	2.45	3.53	4.96	6.88	9.41	12.70	16.87	22.05
Max.	1.34	2.61	4.03	5.81	8.16	11.32	15.50	20.90	27.76	36.29

Room Breathing Zone

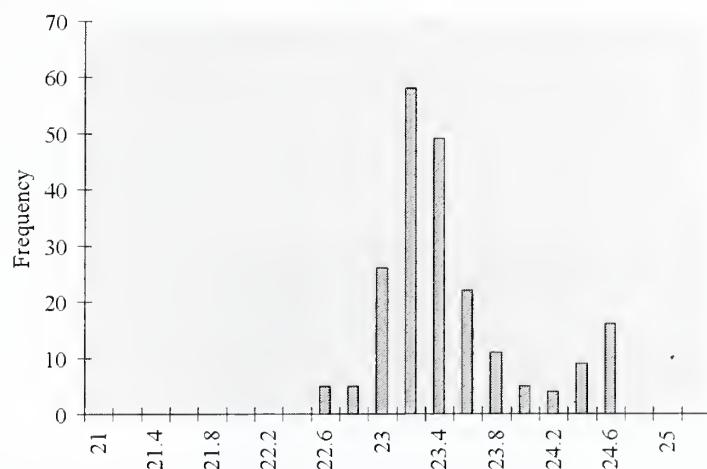
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.06	71.71	64	49.73%
S.D.	0.37	0.66	25	
Max.	23.37	74.07	170	

Room Breathing Zone NH₃ (ppm)

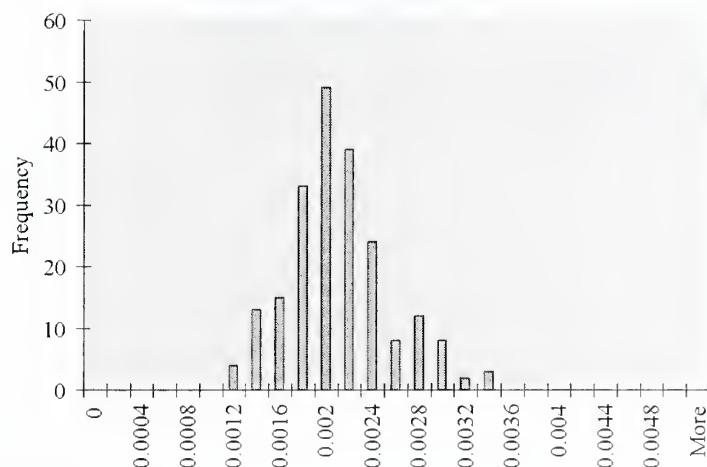
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.52	0.69	0.90
Max.	0.09	0.17	0.27	0.38	0.54	0.75	1.02	1.38	1.83	2.39

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

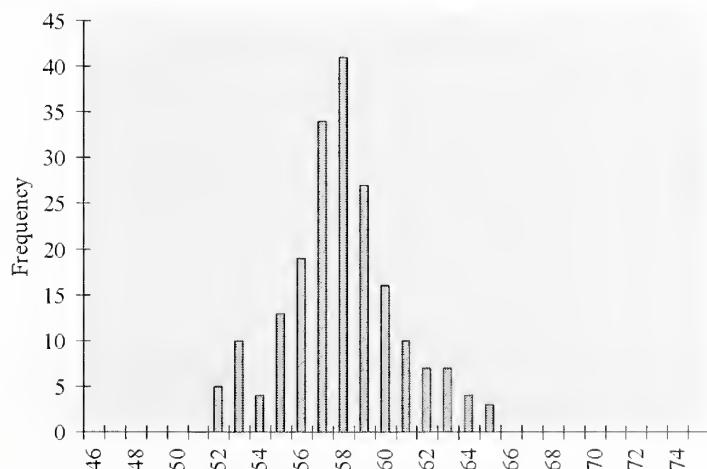


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

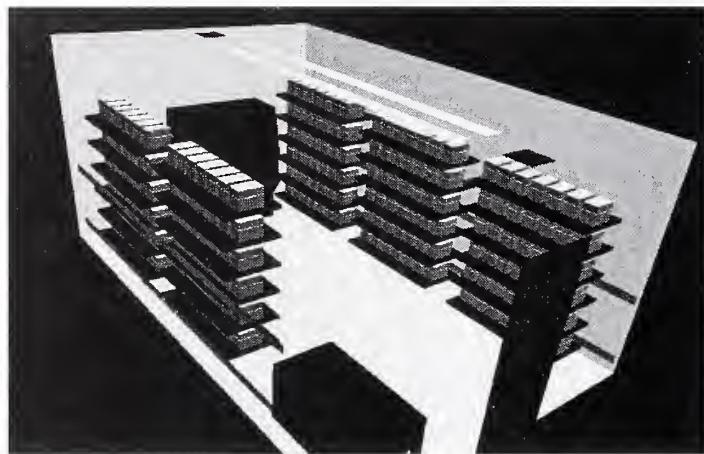


Casename

Case 04

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.17	71.91	1709	62.68%
S.D.	0.29	0.52	286	2.29%
Max.	22.95	73.31	2296	67.45%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.90	1.73	2.67	4.18	6.29	8.96	12.75	16.61	21.17	25.80
Max.	1.20	2.32	3.58	5.62	8.45	12.03	17.13	22.31	28.44	34.67

Room Breathing Zone

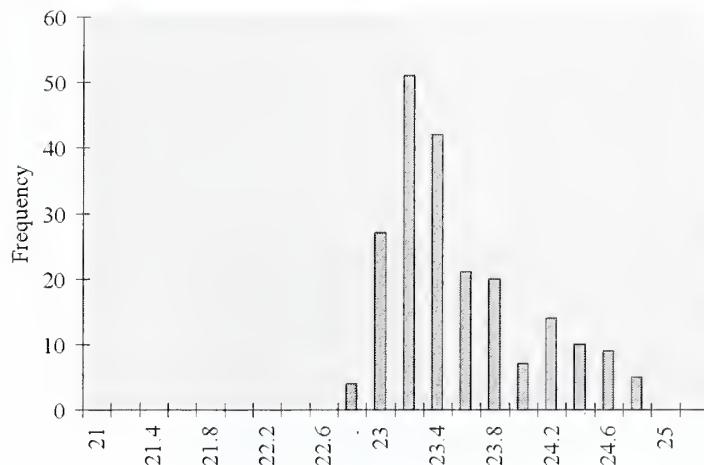
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.42	68.76	62	55.14%
S.D.	0.17	0.31	26	
Max.	21.18	70.12	170	

Room Breathing Zone NH₃ (ppm)

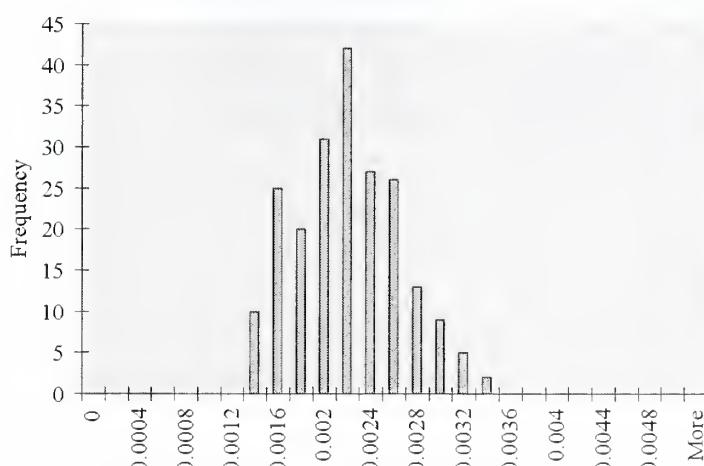
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.15	0.23	0.32	0.46	0.60	0.77	0.94
Max.	0.09	0.17	0.26	0.42	0.62	0.89	1.27	1.65	2.10	2.56

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



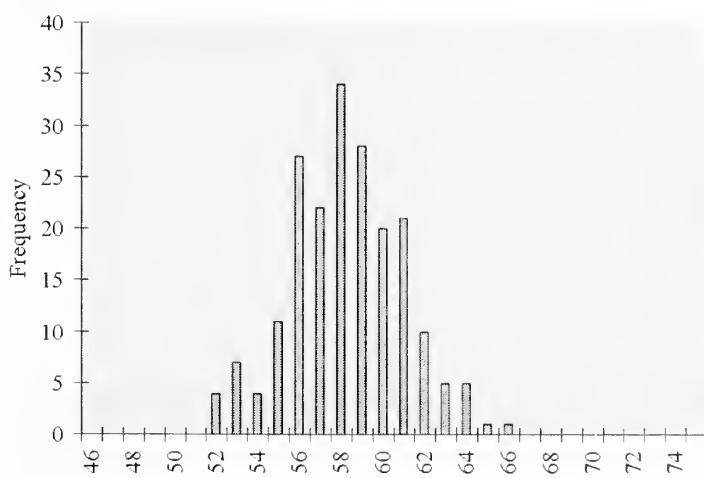
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1922
5	785000	2888
6	785000	4114
7	785000	5857
8	785000	7629
9	785000	9725
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



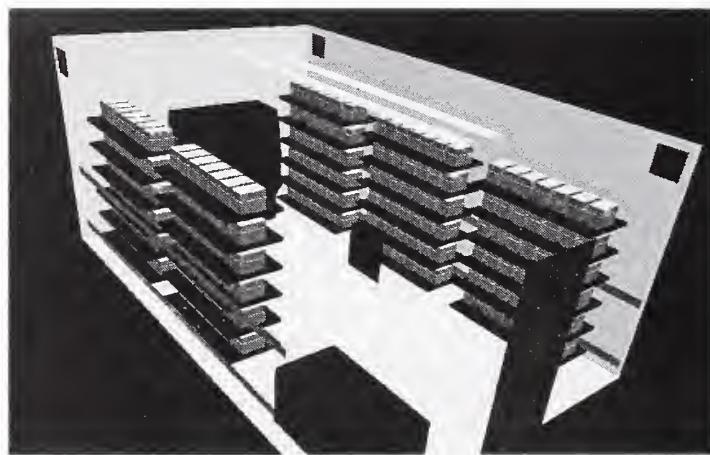
Casename

Case 05**Description**

Supply Configuration Slot	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
	18.8	61%	High	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.28	72.10	1742	62.51%
S.D.	0.25	0.45	276	2.09%
Max.	22.86	73.15	2333	67.21%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.76	2.72	4.23	6.32	8.99	12.75	16.66	21.31	26.14
Max.	1.22	2.36	3.64	5.67	8.46	12.03	17.07	22.30	28.53	34.99

Room Breathing Zone

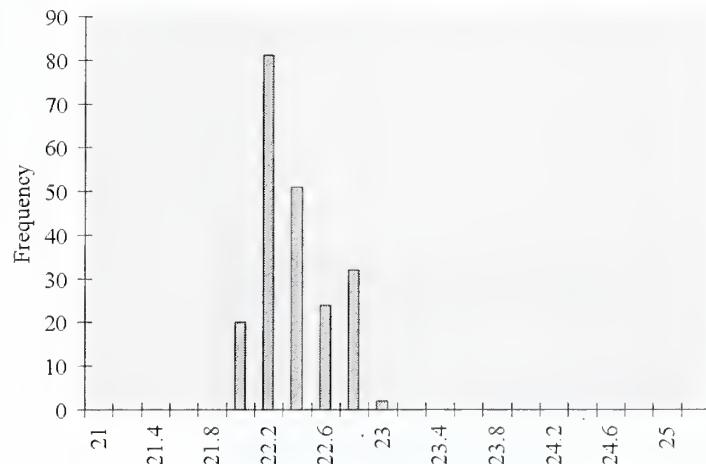
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.54	68.96	49	54.63%
S.D.	0.19	0.34	24	
Max.	21.94	71.48	153	

Room Breathing Zone NH₃ (ppm)

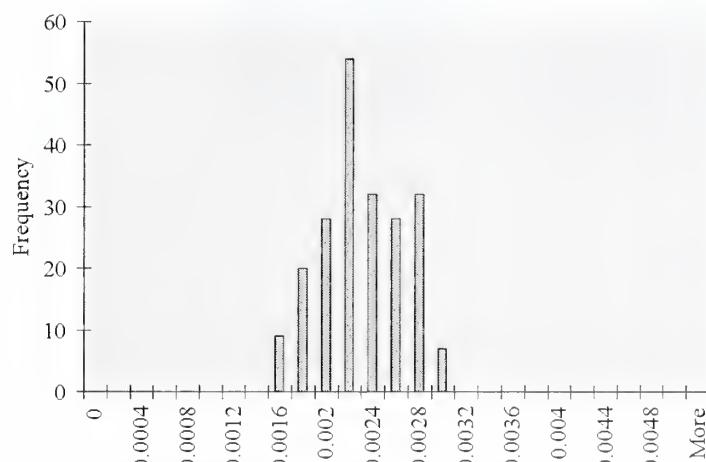
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.12	0.18	0.25	0.36	0.47	0.60	0.74
Max.	0.08	0.16	0.24	0.37	0.56	0.79	1.12	1.47	1.88	2.30

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



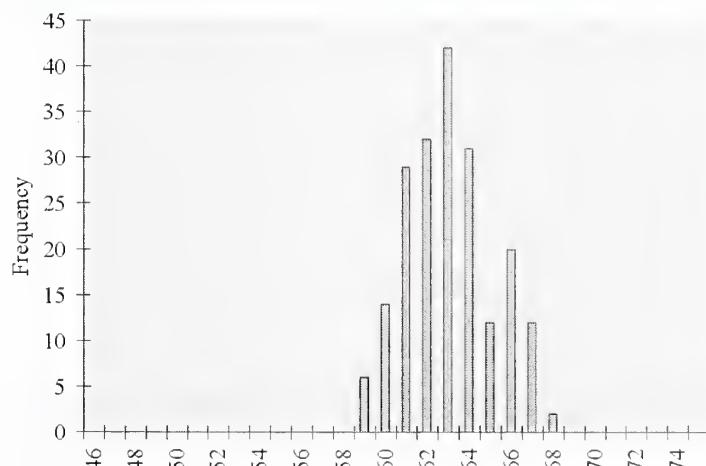
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1906
5	785000	2848
6	785000	4048
7	785000	5744
8	785000	7504
9	785000	9599
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



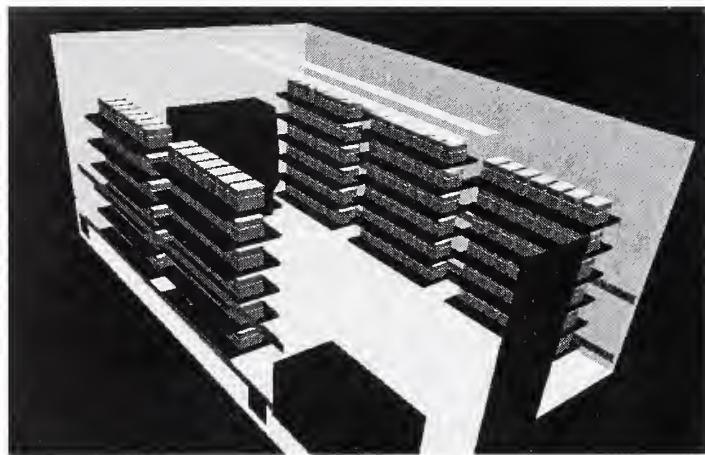
Casename

Case 06**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.45	74.21	1652	57.45%
S.D.	0.49	0.88	353	3.04%
Max.	24.70	76.46	2645	65.27%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.86	1.67	2.58	3.72	5.22	7.24	9.92	13.37	17.76	23.22
Max.	1.38	2.68	4.13	5.95	8.37	11.60	15.88	21.42	28.44	37.18

Room Breathing Zone

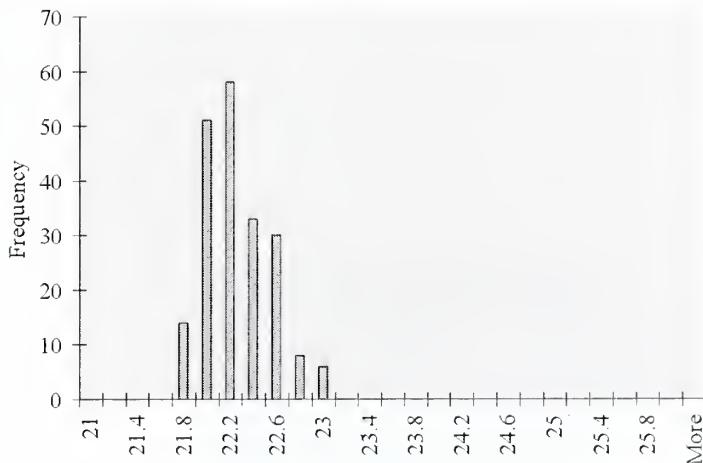
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.26	72.07	72	49.16%
S.D.	0.44	0.80	17	
Max.	23.47	74.25	157	

Room Breathing Zone NH3 (ppm)

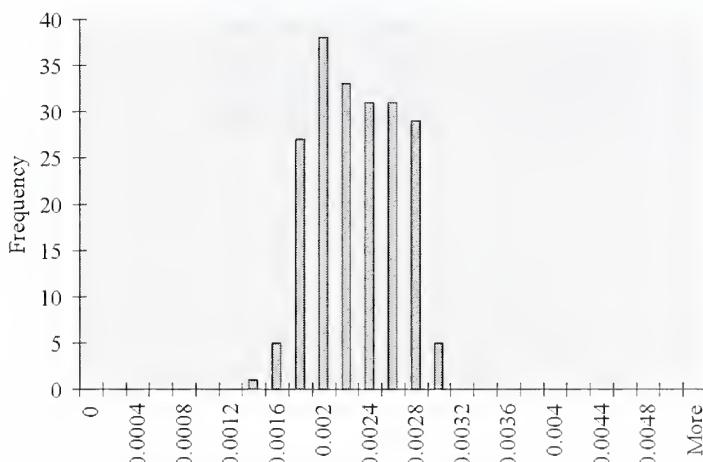
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.16	0.23	0.31	0.43	0.58	0.77	1.01
Max.	0.08	0.16	0.25	0.35	0.50	0.69	0.94	1.27	1.69	2.21

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

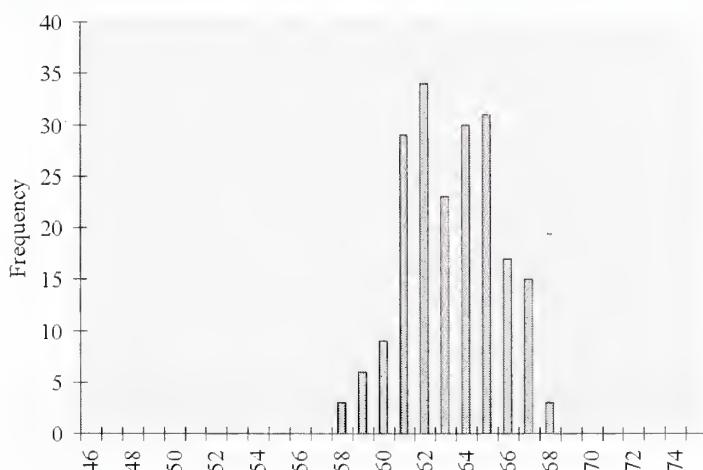


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



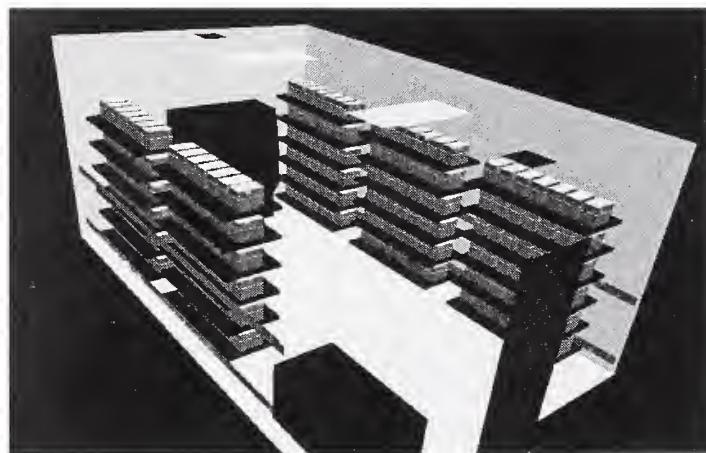
Casename

Case 07**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.45	72.42	2321	66.43%
S.D.	0.66	1.19	488	3.53%
Max.	23.71	74.68	3385	74.89%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.24	2.35	3.62	6.71	11.21	16.60	24.87	30.95	37.22	40.46
Max.	1.80	3.43	5.28	9.79	16.35	24.20	36.26	45.13	54.28	59.00

Room Breathing Zone

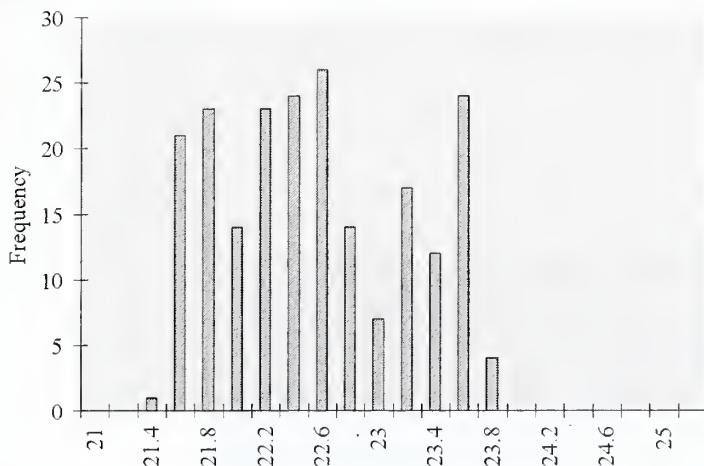
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.96	67.93	57	56.73%
S.D.	0.68	1.22	82	
Max.	22.20	71.96	371	

Room Breathing Zone NH₃ (ppm)

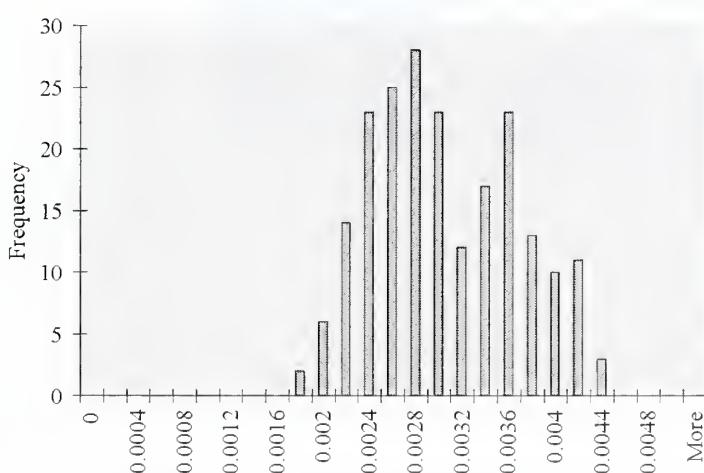
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.16	0.27	0.41	0.61	0.76	0.91	0.99
Max.	0.20	0.38	0.58	1.07	1.79	2.65	3.97	4.94	5.94	6.46

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



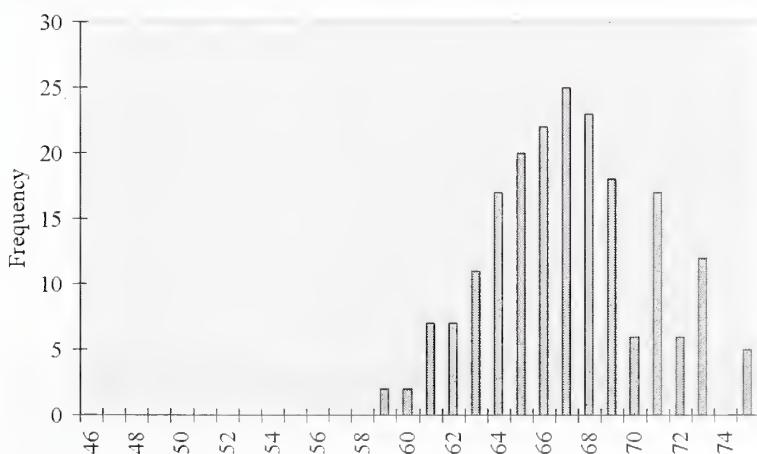
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	418
2	785000	795
3	785000	1225
4	785000	2270
5	785000	3791
6	785000	5612
7	785000	8409
8	785000	10466
9	785000	12587
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



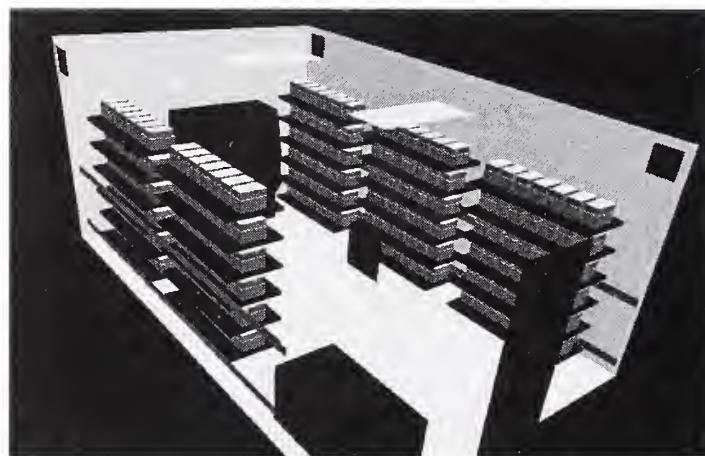
Casename

Case 08**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	High	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.22	71.99	1871	63.81%
S.D.	0.25	0.45	328	2.73%
Max.	22.83	73.10	2638	69.33%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.98	1.89	2.92	4.83	7.53	10.88	15.79	20.22	25.23	29.56
Max.	1.39	2.67	4.12	6.81	10.62	15.34	22.26	28.50	35.57	41.68

Room Breathing Zone

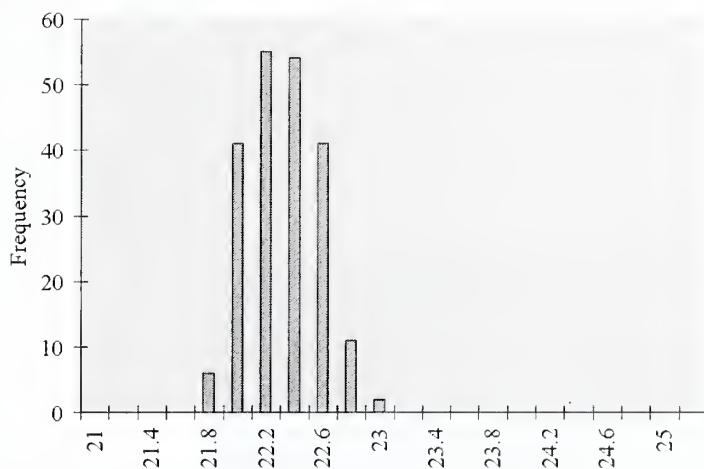
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.48	68.86	64	54.97%
S.D.	0.27	0.48	31	
Max.	21.47	70.65	225	

Room Breathing Zone NH3 (ppm)

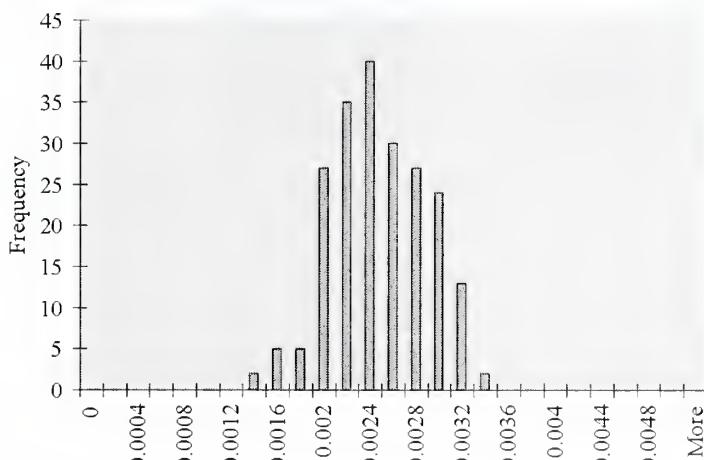
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.16	0.26	0.37	0.54	0.69	0.86	1.01
Max.	0.12	0.23	0.35	0.58	0.91	1.31	1.90	2.43	3.04	3.56

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



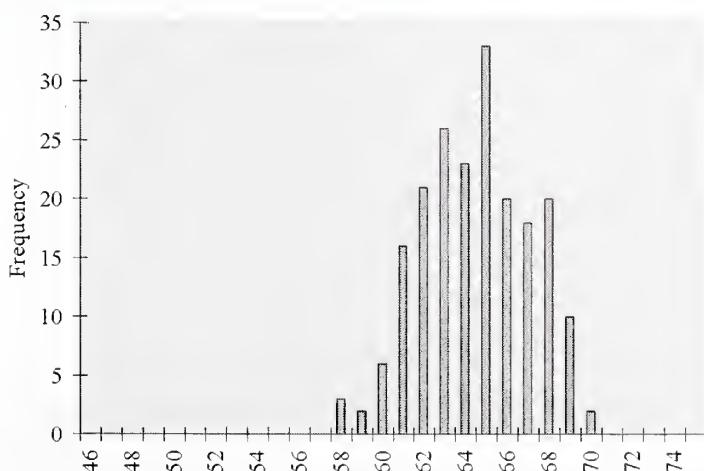
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	413
2	785000	795
3	785000	1225
4	785000	2027
5	785000	3160
6	785000	4565
7	785000	6625
8	785000	8483
9	785000	10586
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



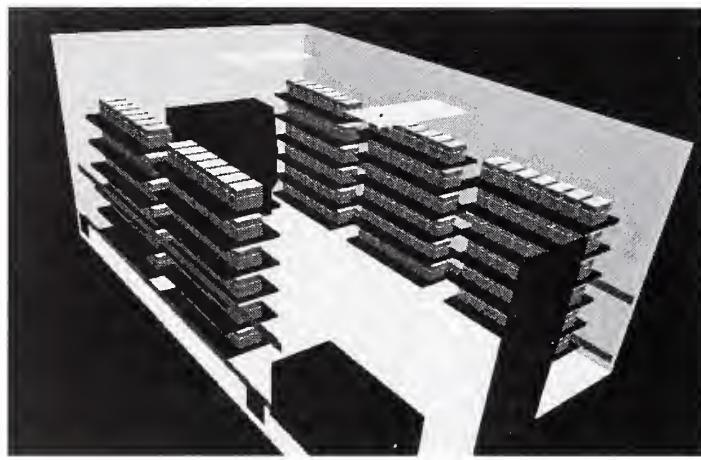
Casename

Case 09**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.61	74.49	1725	57.46%
S.D.	0.54	0.97	335	3.18%
Max.	24.78	76.61	2931	64.20%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.90	1.75	2.69	3.88	5.46	7.57	10.36	13.97	18.55	24.25
Max.	1.52	2.97	4.57	6.59	9.27	12.86	17.60	23.74	31.53	41.21

Room Breathing Zone

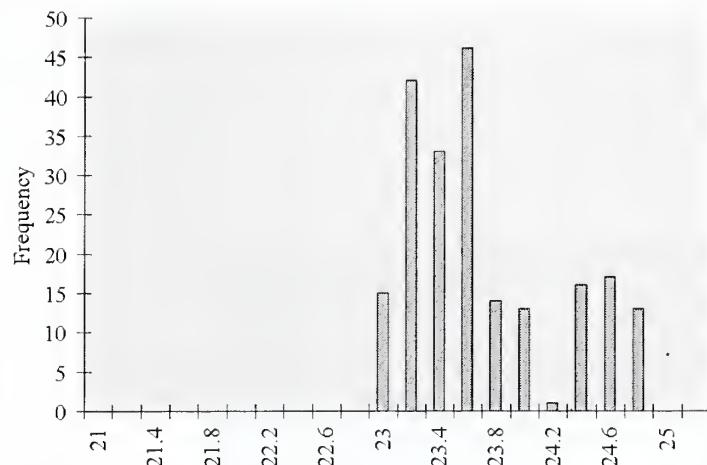
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.57	72.62	88	48.37%
S.D.	0.60	1.08	31	
Max.	23.76	74.76	277	

Room Breathing Zone NH₃ (ppm)

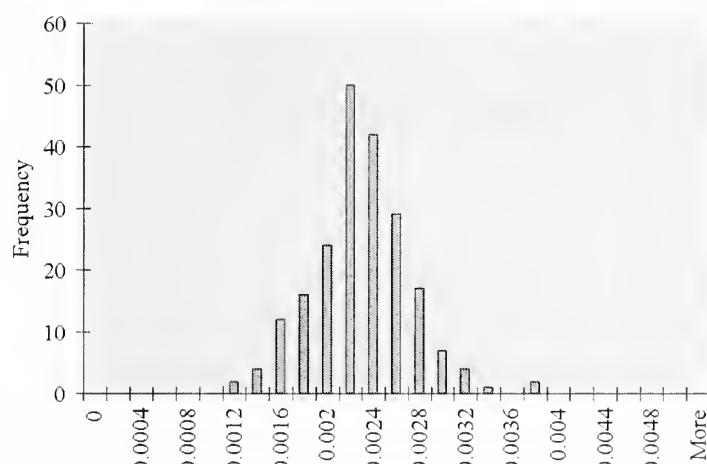
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.09	0.14	0.20	0.28	0.38	0.53	0.71	0.94	1.23
Max.	0.14	0.28	0.43	0.62	0.88	1.21	1.66	2.24	2.98	3.89

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

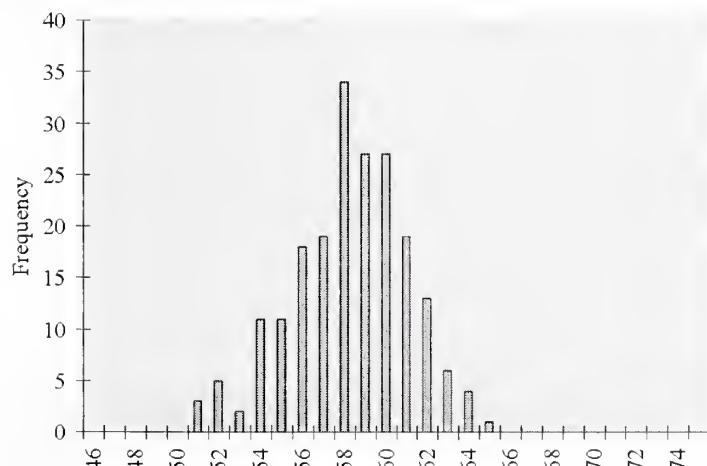


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

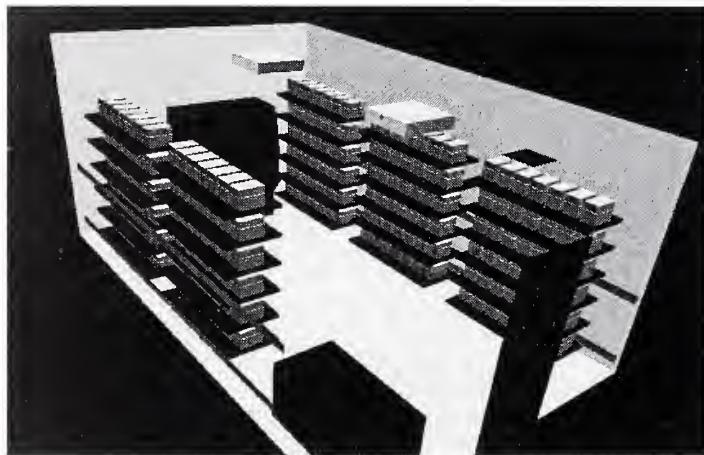
Case 10

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	20.7	54%	Ceiling	22	50%
Change Station OFF	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.24	73.84	2119	61.71%
S.D.	0.28	0.51	376	3.14%
Max.	23.88	74.98	3201	68.32%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.11	2.14	3.31	4.94	7.17	10.06	14.03	18.61	24.25	30.72
Max.	1.67	3.24	5.00	7.47	10.83	15.20	21.20	28.12	36.65	46.42

Room Breathing Zone

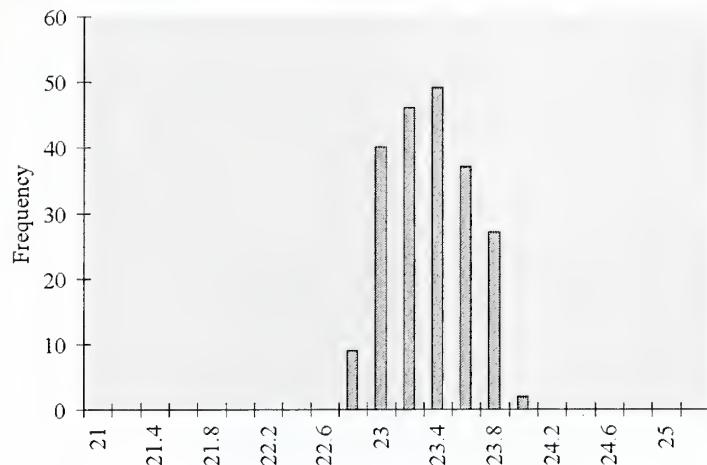
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.92	69.66	29	53.13%
S.D.	0.39	0.70	44	
Max.	22.21	71.98	158	

Room Breathing Zone NH₃ (ppm)

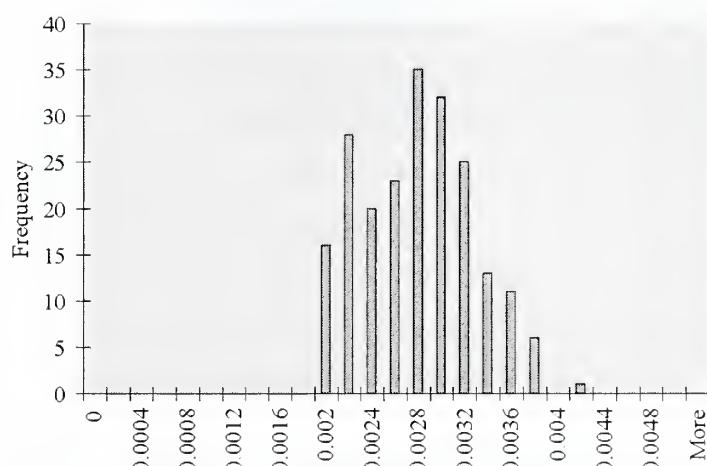
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.03	0.05	0.07	0.10	0.14	0.19	0.26	0.33	0.42
Max.	0.08	0.16	0.25	0.37	0.53	0.75	1.05	1.39	1.81	2.29

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



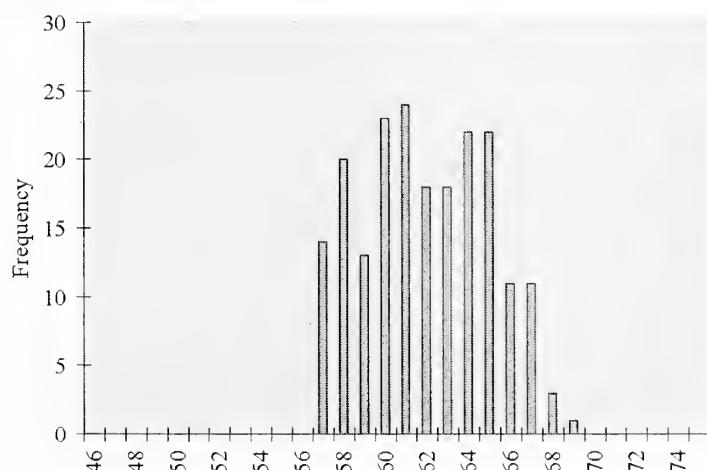
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	410
2	785000	795
3	785000	1225
4	785000	1832
5	785000	2655
6	785000	3728
7	785000	5198
8	785000	6897
9	785000	8987
10	785000	11384

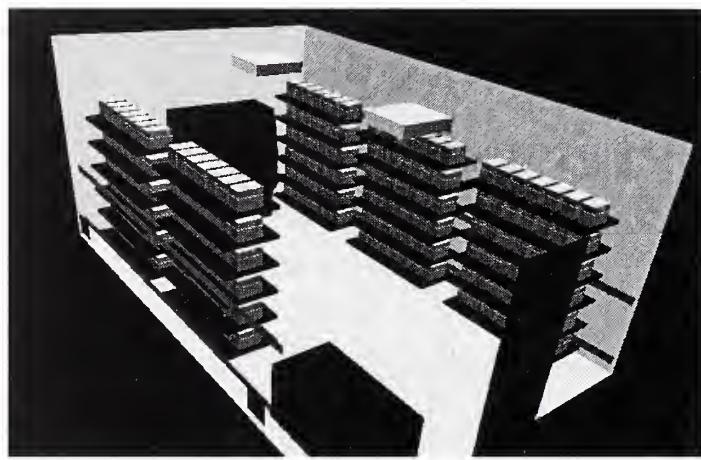
Cage occupied zone average relative humidity (%) distribution



Casename

Case 11**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	20.7	54%	Low	22	50%
Change Station OFF	Rack Orientation On wall	Rack Density Single	Number of Mice in Room 1050	Total mass of Mice in Room 21000 gr	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.75	72.95	2118	63.61%
S.D.	0.27	0.48	412	2.69%
Max.	23.36	74.04	2903	69.23%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.11	2.14	3.30	5.42	8.40	12.10	17.51	22.48	28.16	33.21
Max.	1.53	2.94	4.53	7.43	11.51	16.59	24.01	30.82	38.60	45.52

Room Breathing Zone

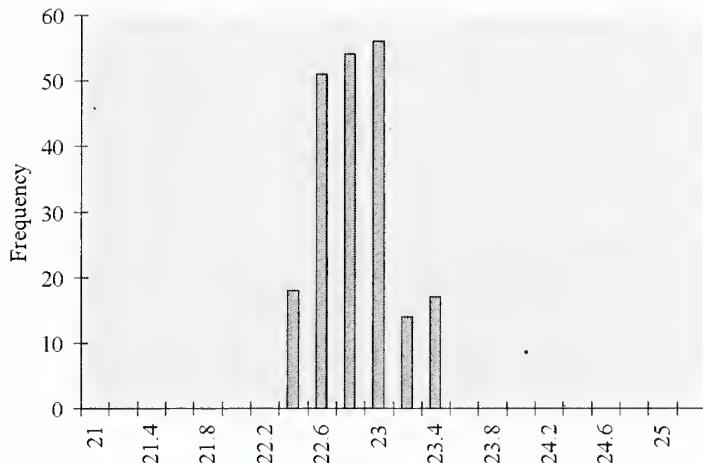
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.31	70.35	48	52.02%
S.D.	0.39	0.70	55	
Max.	22.11	71.81	223	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.07	0.12	0.19	0.27	0.39	0.51	0.63	0.75
Max.	0.12	0.23	0.35	0.57	0.88	1.27	1.84	2.36	2.96	3.49

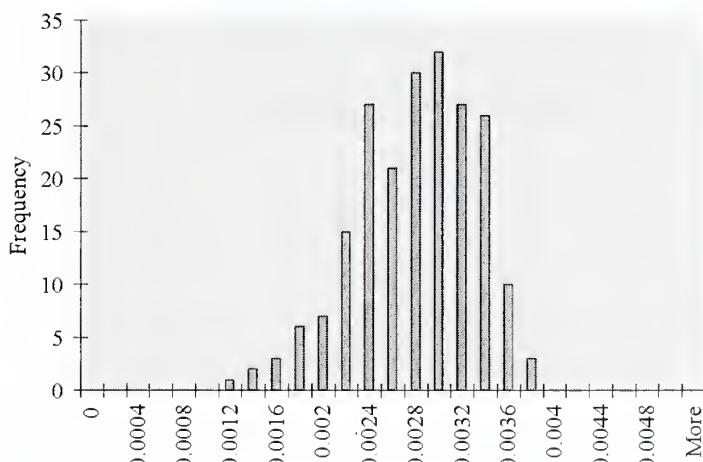
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



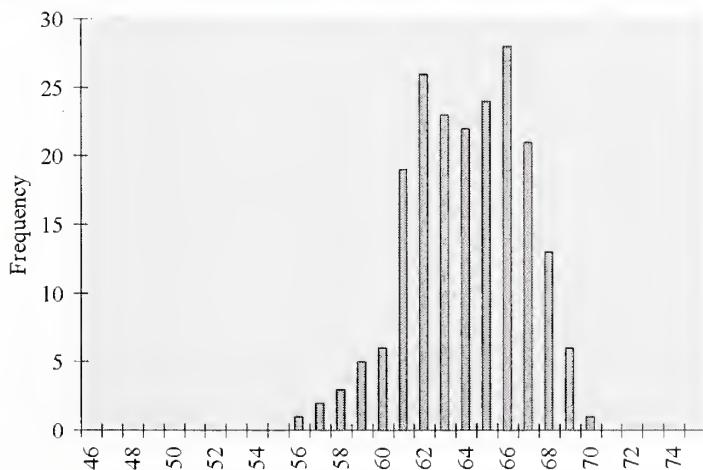
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	413
2	785000	795
3	785000	1225
4	785000	2008
5	785000	3112
6	785000	4486
7	785000	6491
8	785000	8334
9	785000	10436
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



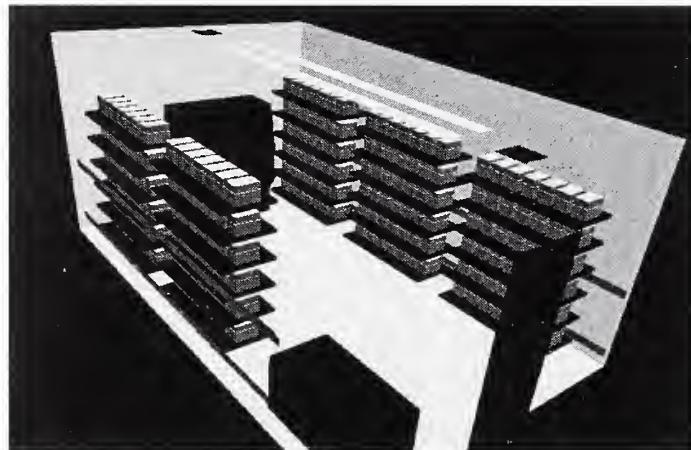
Casename

Case 12**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	20.7	54%	Ceiling	22	50%
Change Station OFF	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
On wall		Single	1050	21000 gr	

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.91	73.24	2208	63.65%
S.D.	0.37	0.67	441	2.78%
Max.	23.58	74.45	3024	69.07%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.16	2.23	3.45	5.66	8.78	12.66	18.32	23.52	29.43	34.67
Max.	1.59	3.06	4.72	7.75	12.02	17.33	25.09	32.20	40.30	47.47

Room Breathing Zone

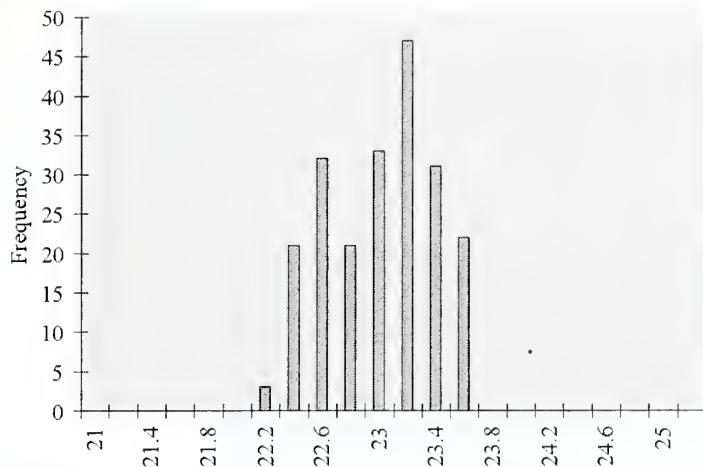
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.13	70.03	17	52.35%
S.D.	0.44	0.80	42	
Max.	22.14	71.85	231	

Room Breathing Zone NH3 (ppm)

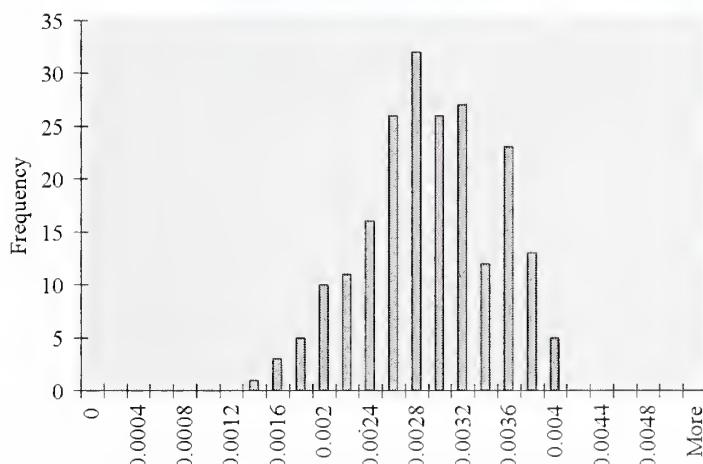
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.01	0.02	0.03	0.04	0.07	0.10	0.14	0.18	0.23	0.27
Max.	0.12	0.23	0.36	0.59	0.92	1.32	1.92	2.46	3.08	3.63

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

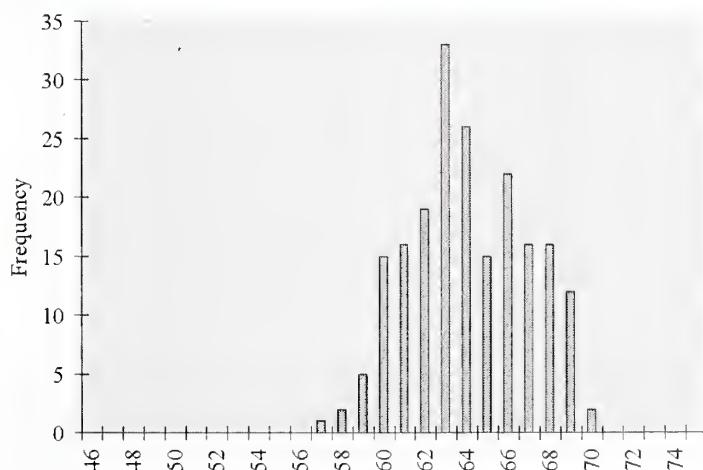


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	413
2	785000	795
3	785000	1225
4	785000	2011
5	785000	3121
6	785000	4500
7	785000	6514
8	785000	8360
9	785000	10462
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



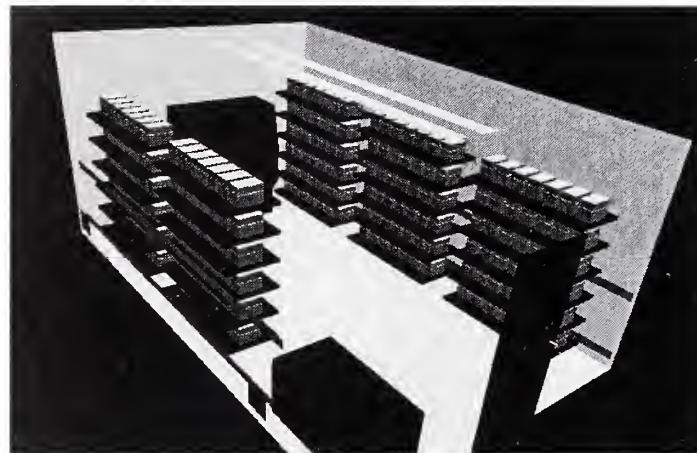
Casename

Case 13**Description**

Supply Configuration Slot	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
	20.7	54%	Low	22	50%
Change Station OFF	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.77	72.98	2491	66.46%
S.D.	0.21	0.38	254	1.81%
Max.	23.37	74.06	3001	70.61%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.33	2.52	3.89	7.21	12.05	17.85	26.75	33.29	40.02	43.47
Max.	1.60	3.04	4.68	8.69	14.52	21.50	32.23	40.10	48.21	52.37

Room Breathing Zone

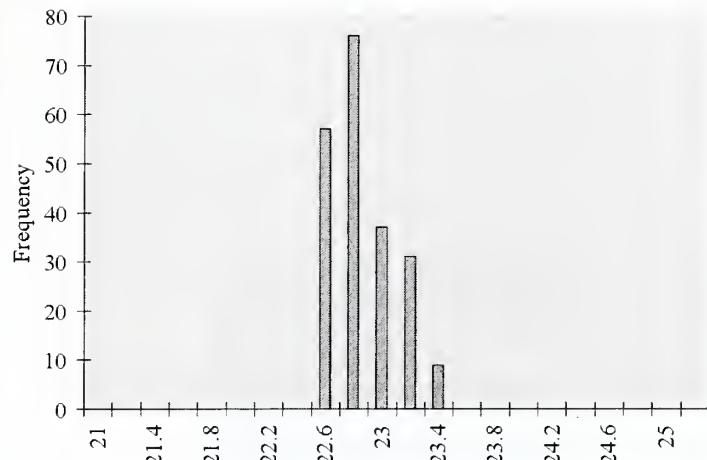
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.84	69.51	37	53.47%
S.D.	0.17	0.31	58	
Max.	22.04	71.67	281	

Room Breathing Zone NH3 (ppm)

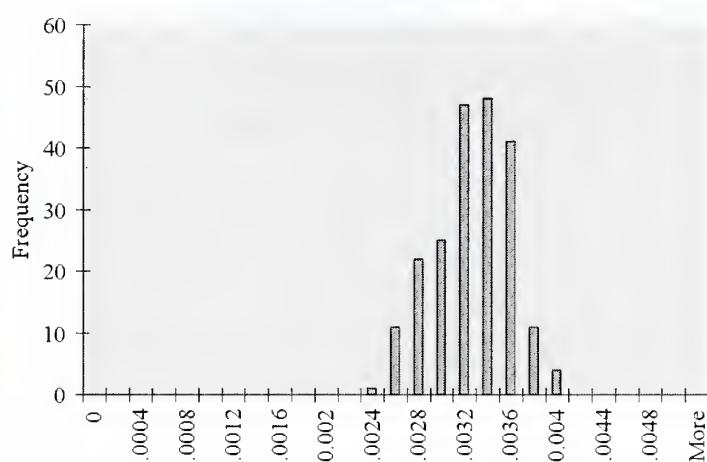
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.11	0.18	0.26	0.39	0.49	0.59	0.64
Max.	0.15	0.28	0.44	0.81	1.36	2.01	3.02	3.75	4.51	4.90

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



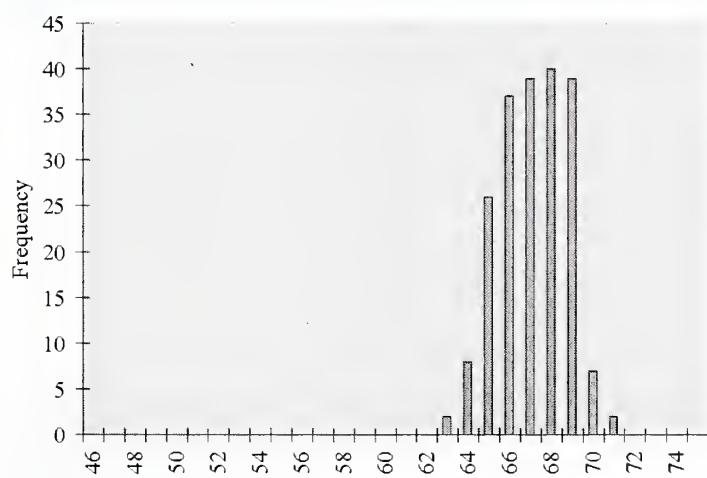
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg \rightarrow ppm)

Day	CO ₂	NH ₃
1	785000	418
2	785000	795
3	785000	1225
4	785000	2273
5	785000	3798
6	785000	5624
7	785000	8430
8	785000	10490
9	785000	12611
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



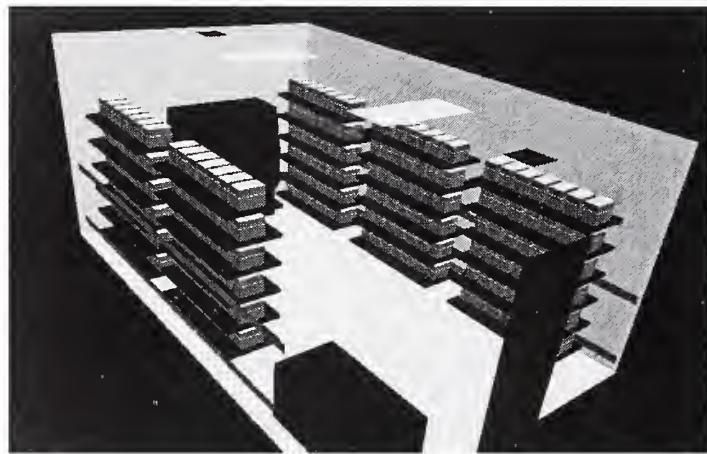
Casename

Case 14**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	20.7	54%	Ceiling	22	50%
Change Station OFF	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.80	73.04	2215	64.18%
S.D.	0.21	0.37	222	1.51%
Max.	23.32	73.97	2619	67.00%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.17	2.24	3.46	5.82	9.17	13.30	19.40	24.73	30.67	35.51
Max.	1.38	2.65	4.09	6.88	10.84	15.72	22.94	29.23	36.26	41.99

Room Breathing Zone

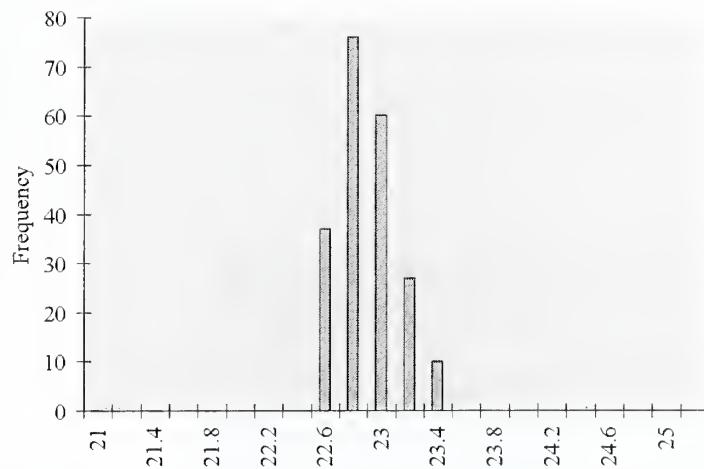
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.12	70.01	52	52.68%
S.D.	0.17	0.31	23	
Max.	22.07	71.72	220	

Room Breathing Zone NH3 (ppm)

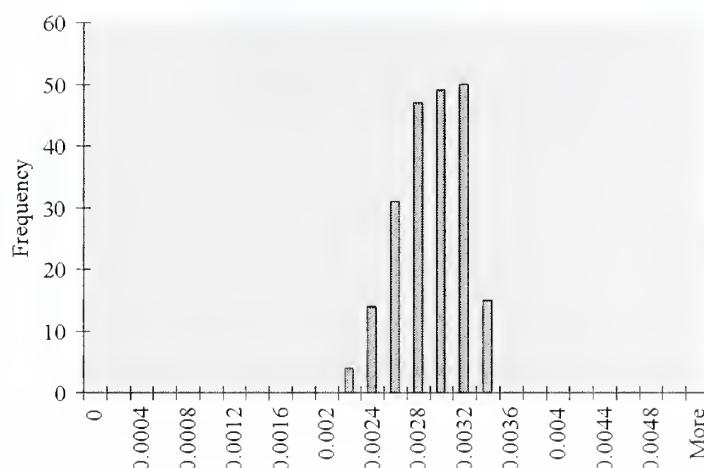
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.14	0.21	0.31	0.45	0.58	0.72	0.83
Max.	0.12	0.22	0.34	0.58	0.91	1.32	1.93	2.45	3.04	3.52

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



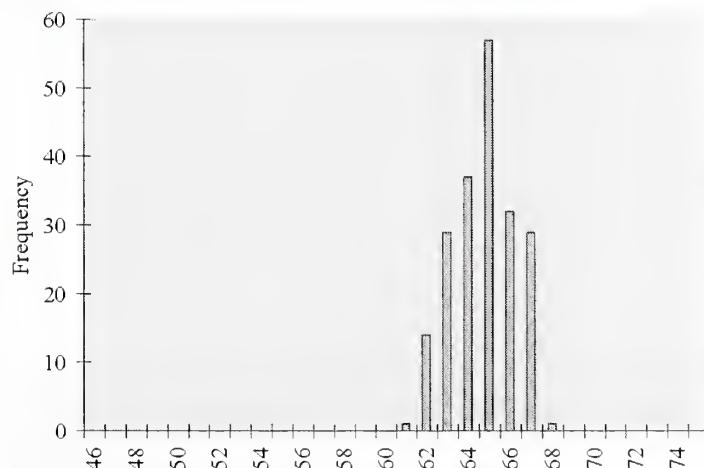
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2061
5	785000	3249
6	785000	4713
7	785000	6877
8	785000	8763
9	785000	10869
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



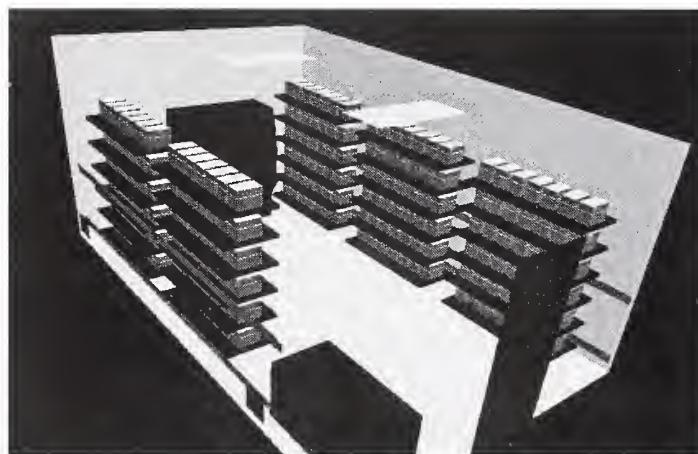
Casename

Case 15**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	20.7	54%	Low	22	50%
Change Station OFF	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.24	73.84	2119	61.71%
S.D.	0.28	0.51	376	3.14%
Max.	23.88	74.98	3201	68.32%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.11	2.14	3.31	4.94	7.17	10.06	14.03	18.61	24.25	30.72
Max.	1.67	3.24	5.00	7.47	10.83	15.20	21.20	28.12	36.65	46.42

Room Breathing Zone

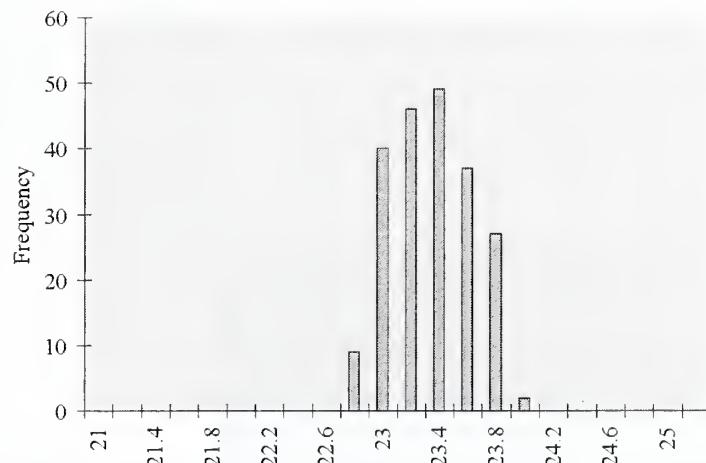
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.21	70.19	48	52.32%
S.D.	0.16	0.29	44	
Max.	21.94	71.50	306	

Room Breathing Zone NH3 (ppm)

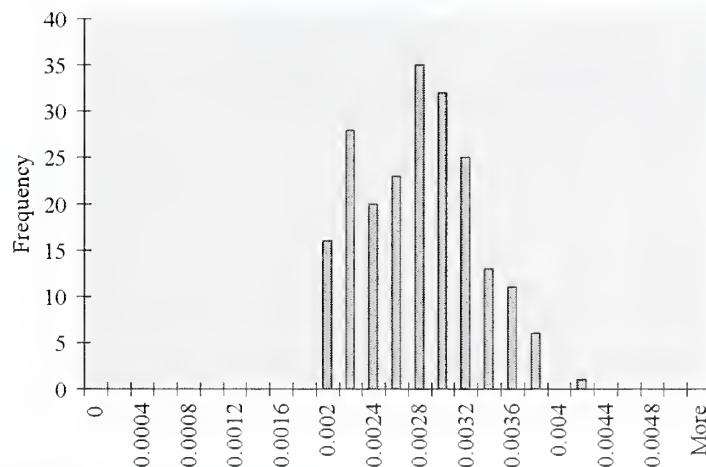
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.07	0.11	0.16	0.23	0.32	0.42	0.55	0.70
Max.	0.16	0.31	0.48	0.71	1.03	1.45	2.02	2.69	3.50	4.43

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



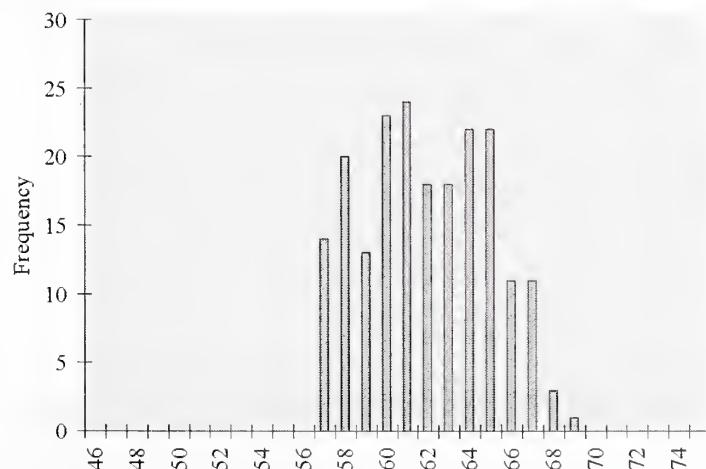
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	410
2	785000	795
3	785000	1225
4	785000	1832
5	785000	2655
6	785000	3728
7	785000	5198
8	785000	6897
9	785000	8987
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



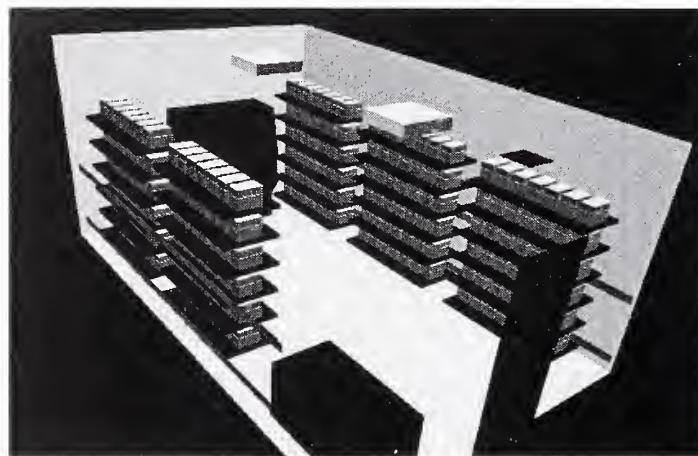
Casename

Case 16**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation pos 100cfm
ON	On wall	Single	1050	21000 gr	

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.85	73.13	2213	63.97%
S.D.	0.81	1.45	450	3.43%
Max.	24.17	75.50	3126	74.23%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.17	2.24	3.45	5.76	9.02	13.05	18.99	24.26	30.19	35.20
Max.	1.65	3.16	4.88	8.13	12.74	18.43	26.82	34.26	42.65	49.71

Room Breathing Zone

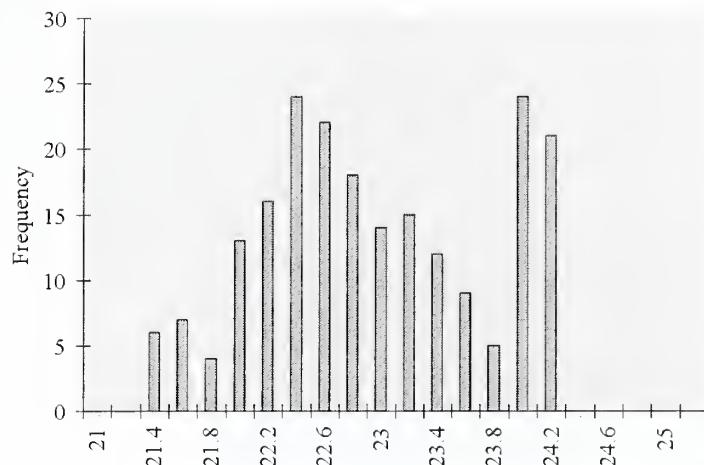
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.07	68.12	37	56.18%
S.D.	1.29	2.33	47	
Max.	23.06	73.52	251	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.10	0.15	0.22	0.31	0.40	0.50	0.58
Max.	0.13	0.25	0.39	0.65	1.02	1.48	2.16	2.76	3.43	4.00

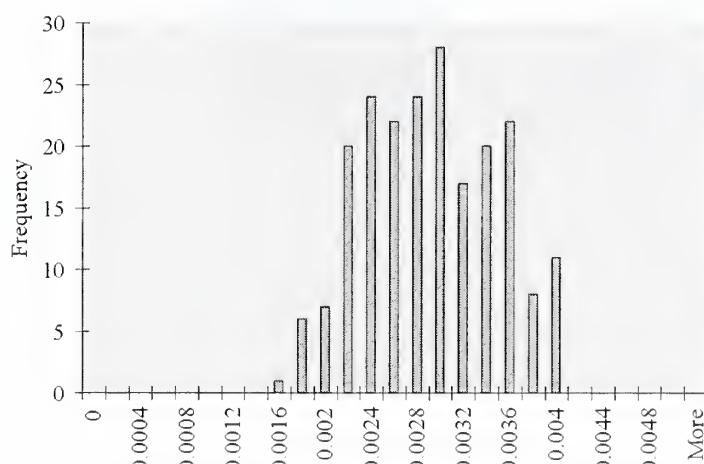
Histogram Distributions

Cage occupied zone average temperature (°C) distribution

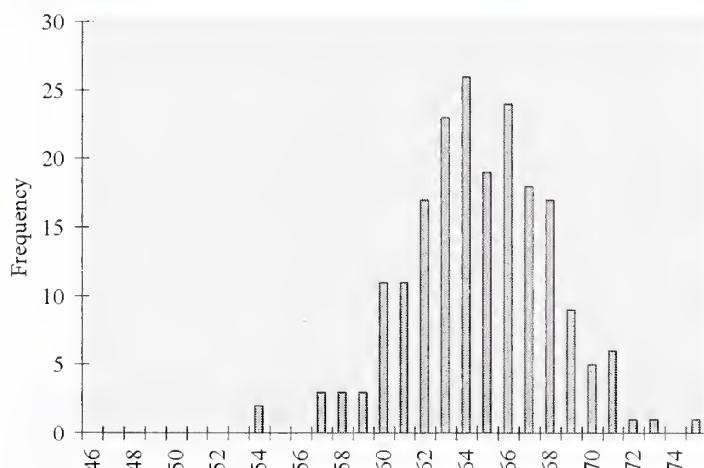


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)



Cage occupied zone average relative humidity (%) distribution



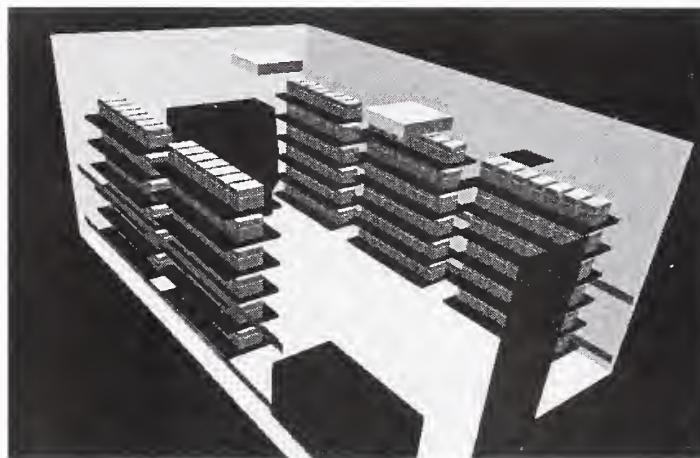
Casename

Case 17**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation pos 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.07	71.73	1815	63.94%
S.D.	0.29	0.52	292	2.38%
Max.	23.08	73.55	2464	68.92%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.96	1.84	2.83	4.71	7.38	10.67	15.52	19.84	24.70	28.82
Max.	1.30	2.49	3.84	6.40	10.01	14.49	21.07	26.93	33.54	39.13

Room Breathing Zone

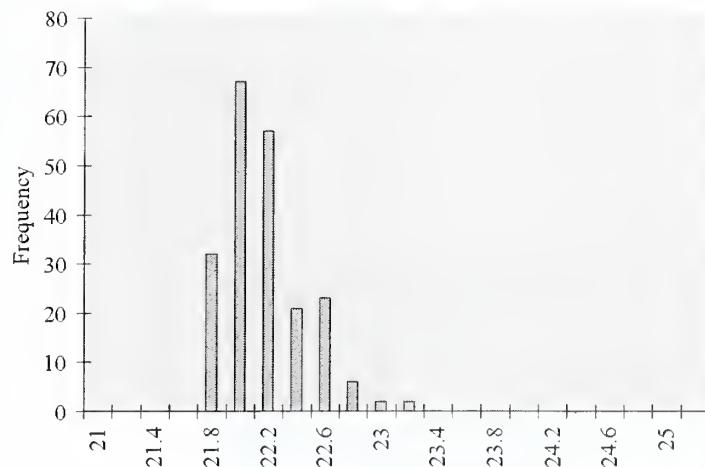
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.23	68.41	78	55.99%
S.D.	0.13	0.23	28	
Max.	21.35	70.43	181	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.08	0.12	0.20	0.32	0.46	0.66	0.85	1.06	1.23
Max.	0.10	0.18	0.28	0.47	0.73	1.06	1.54	1.97	2.46	2.87

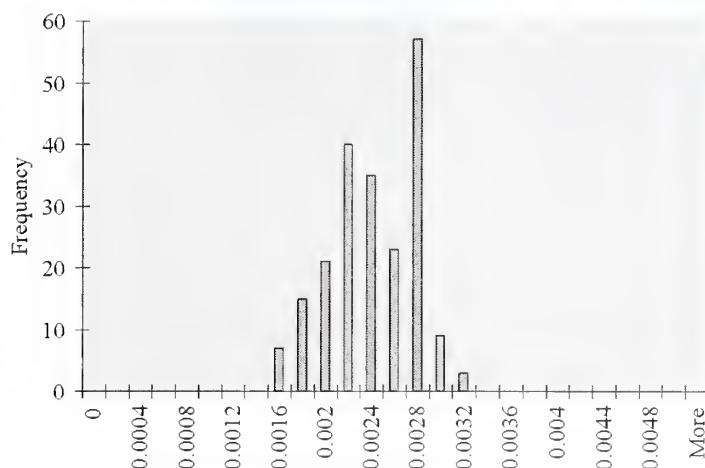
Histogram Distributions

Cage occupied zone average temperature (°C) distribution

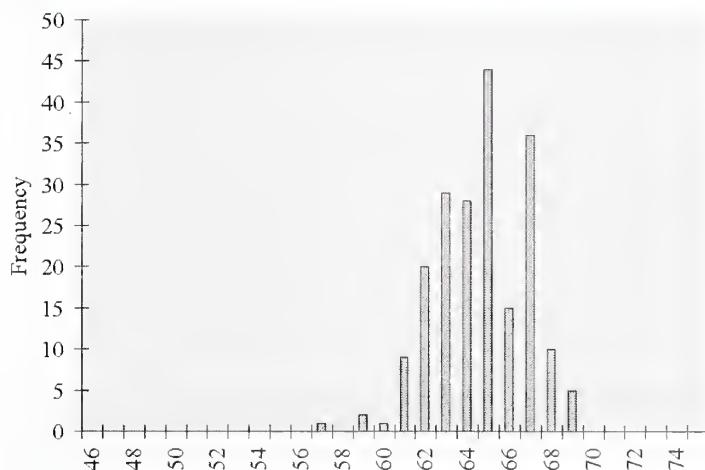


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)



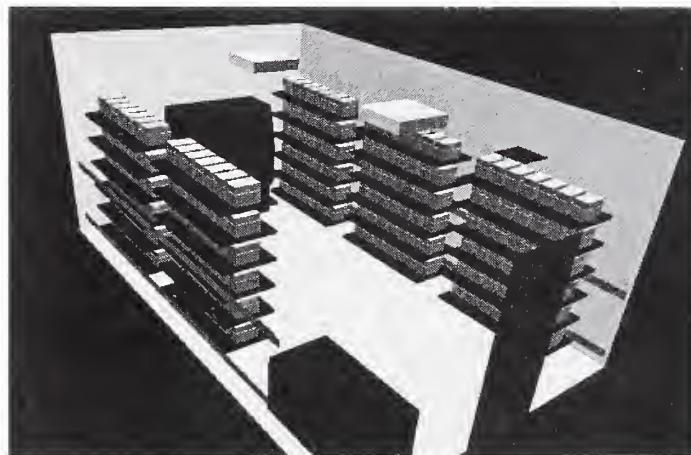
Cage occupied zone average relative humidity (%) distribution



Casename

Case 18**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation On wall	Rack Density Single	Number of Mice in Room 1050	Total mass of Mice in Room 21000 gr	Room Pressurisation pos 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.06	71.71	1791	63.78%
S.D.	0.29	0.52	287	2.35%
Max.	23.08	73.55	2435	68.75%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.94	1.81	2.79	4.62	7.19	10.39	15.07	19.30	24.10	28.27
Max.	1.28	2.47	3.80	6.28	9.78	14.12	20.48	26.24	32.77	38.44

Room Breathing Zone

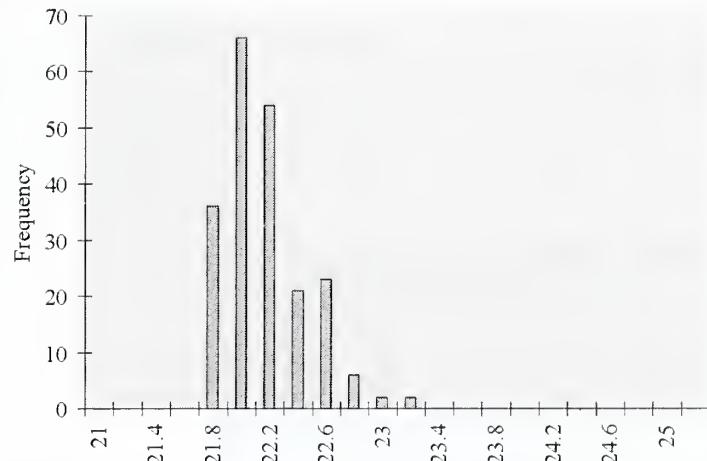
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.22	68.40	79	56.00%
S.D.	0.13	0.24	28	
Max.	21.35	70.43	181	

Room Breathing Zone NH₃ (ppm)

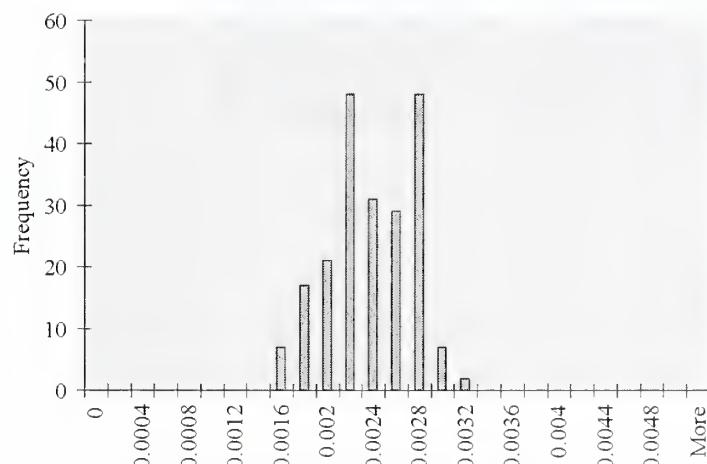
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.08	0.12	0.20	0.32	0.46	0.67	0.85	1.06	1.25
Max.	0.10	0.18	0.28	0.47	0.73	1.05	1.53	1.96	2.44	2.86

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



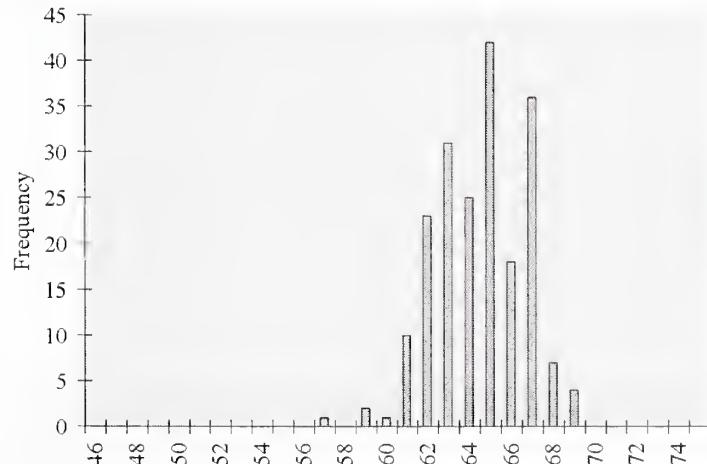
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	413
2	785000	795
3	785000	1225
4	785000	2024
5	785000	3152
6	785000	4552
7	785000	6603
8	785000	8458
9	785000	10562
10	785000	11384

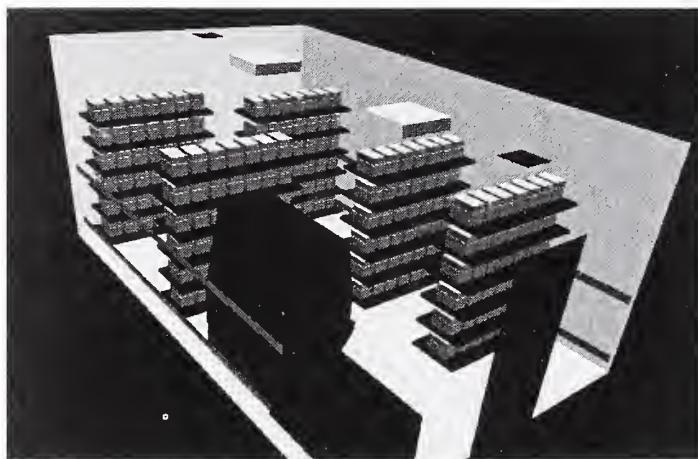
Cage occupied zone average relative humidity (%) distribution



Casename

Case 19**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.73	71.11	1725	64.59%
S.D.	0.20	0.37	346	2.80%
Max.	22.37	72.27	2353	69.85%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.75	2.69	4.61	7.36	10.72	15.74	19.95	24.59	28.11
Max.	1.24	2.38	3.67	6.29	10.04	14.63	21.46	27.21	33.53	38.34

Room Breathing Zone

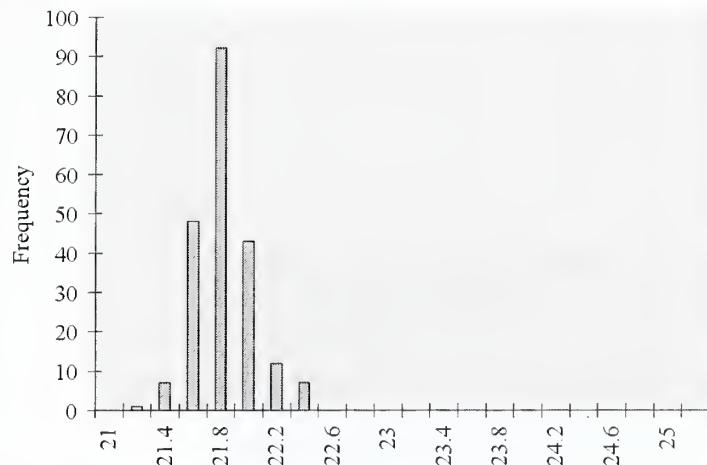
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.20	68.36	59	55.90%
S.D.	0.57	1.03	20	
Max.	26.19	79.14	222	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.16	0.25	0.36	0.54	0.68	0.84	0.96
Max.	0.12	0.22	0.35	0.59	0.95	1.38	2.03	2.57	3.16	3.62

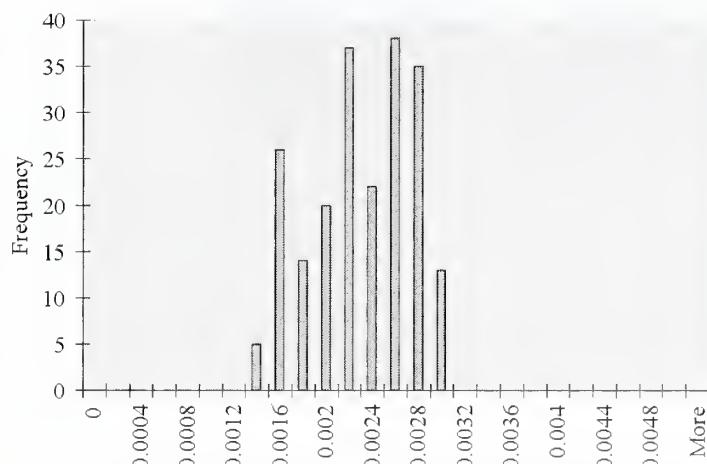
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



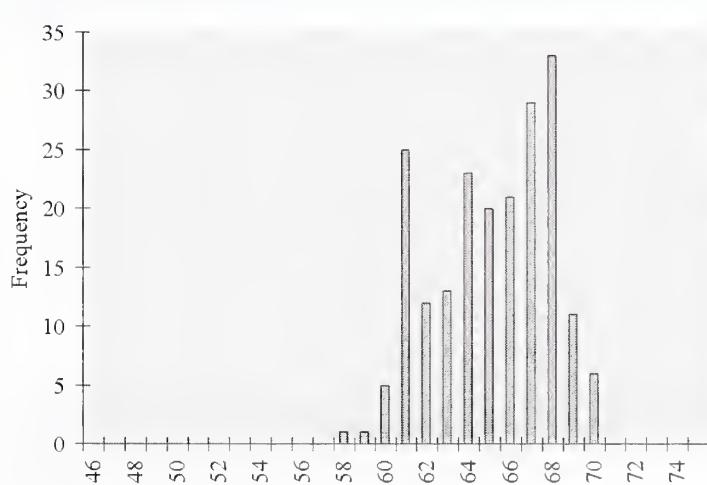
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Cage occupied zone average relative humidity (%) distribution

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2100
5	785000	3349
6	785000	4879
7	785000	7160
8	785000	9078
9	785000	11186
10	785000	11384



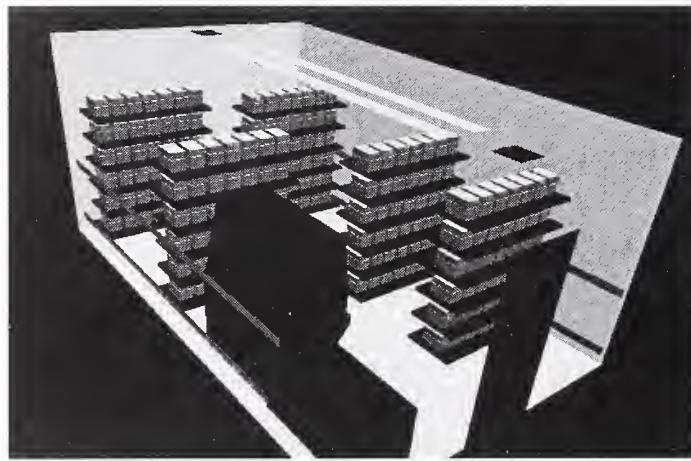
Casename

Case 20**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.08	71.74	1656	62.61%
S.D.	0.29	0.52	296	2.07%
Max.	22.72	72.89	2352	67.60%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.87	1.68	2.58	4.04	6.06	8.62	12.26	15.98	20.40	24.94
Max.	1.23	2.38	3.67	5.74	8.60	12.25	17.41	22.70	28.98	35.42

Room Breathing Zone

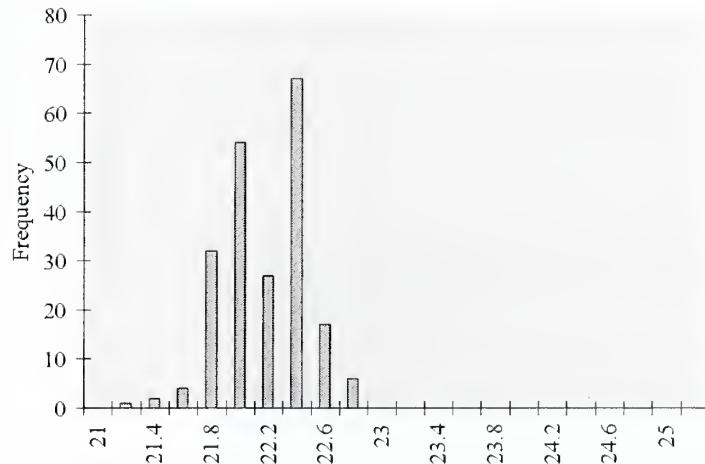
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.56	69.00	75	54.79%
S.D.	0.58	1.05	28	
Max.	27.19	80.94	174	

Room Breathing Zone NH₃ (ppm)

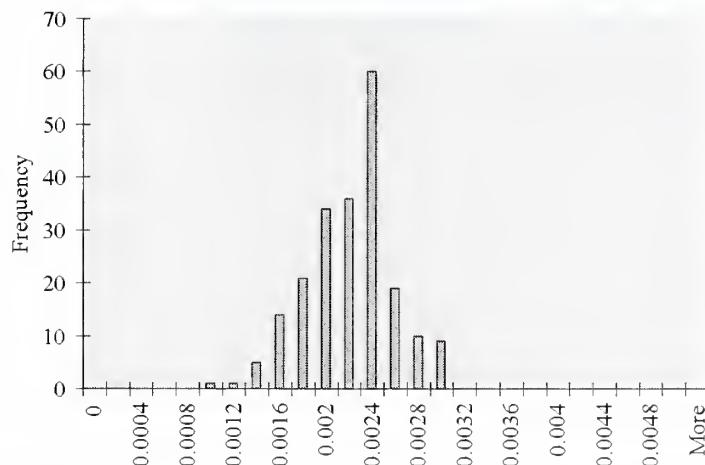
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.08	0.12	0.18	0.27	0.39	0.55	0.72	0.92	1.13
Max.	0.09	0.18	0.27	0.43	0.64	0.91	1.29	1.68	2.15	2.62

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



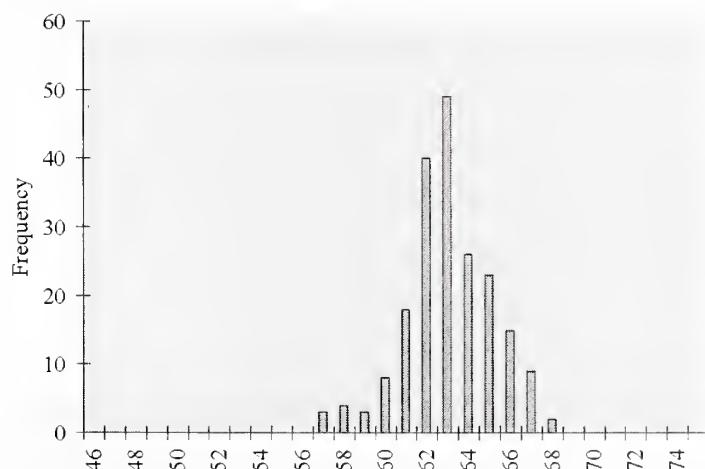
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1915
5	785000	2871
6	785000	4087
7	785000	5810
8	785000	7576
9	785000	9672
10	785000	11384

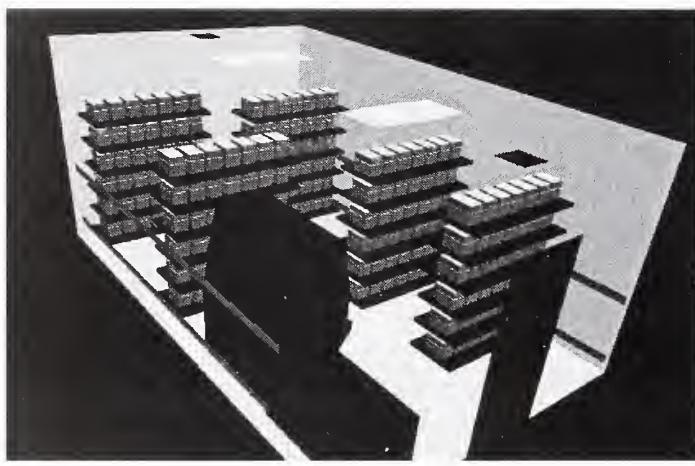
Cage occupied zone average relative humidity (%) distribution



Casename

Case 21**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.01	71.62	1808	64.10%
S.D.	0.23	0.42	309	2.32%
Max.	22.60	72.68	2555	69.39%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.95	1.83	2.82	4.73	7.44	10.79	15.72	20.05	24.90	28.90
Max.	1.35	2.59	3.99	6.69	10.52	15.24	22.22	28.34	35.20	40.85

Room Breathing Zone

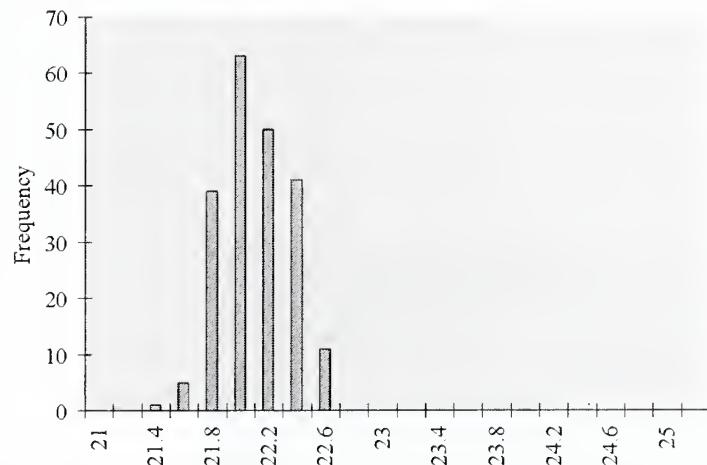
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.40	68.71	62	55.24%
S.D.	0.60	1.08	24	
Max.	27.06	80.71	186	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.16	0.26	0.37	0.54	0.69	0.85	0.99
Max.	0.10	0.19	0.29	0.49	0.77	1.11	1.62	2.06	2.56	2.98

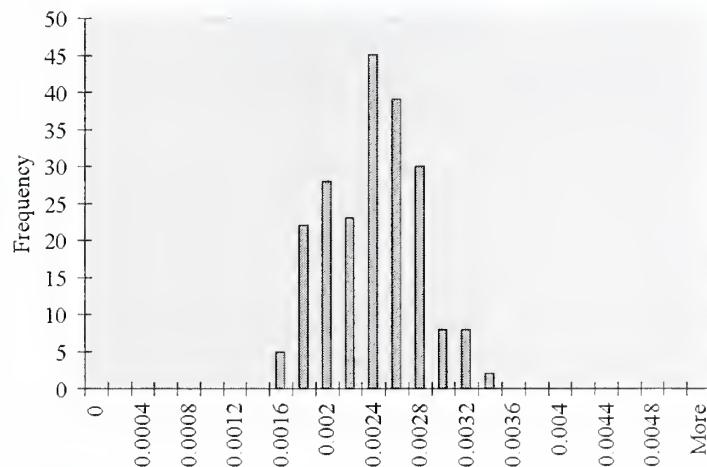
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



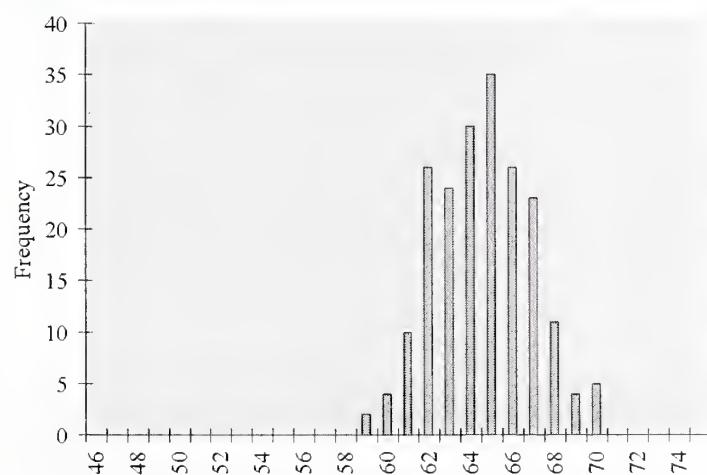
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Cage occupied zone average relative humidity (%) distribution

Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2054
5	785000	3231
6	785000	4683
7	785000	6826
8	785000	8706
9	785000	10811
10	785000	11384



Casename

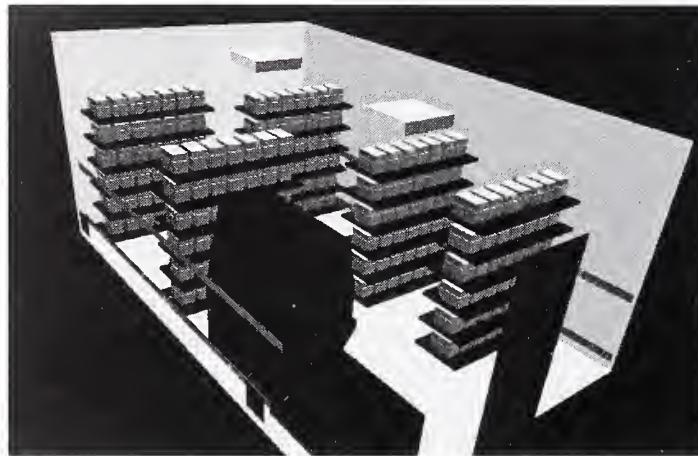
Case 22

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.47	72.45	1665	61.14%
S.D.	0.34	0.62	446	3.32%
Max.	23.41	74.13	2623	67.76%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.87	1.69	2.60	3.77	5.34	7.42	10.20	13.71	18.13	23.55
Max.	1.37	2.66	4.09	5.94	8.41	11.69	16.06	21.59	28.57	37.11

Room Breathing Zone

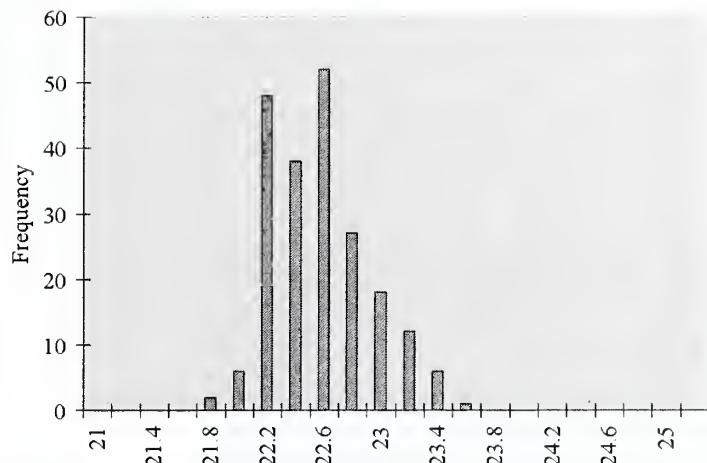
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.24	70.24	61	52.34%
S.D.	0.71	1.27	28	
Max.	26.82	80.28	217	

Room Breathing Zone NH₃ (ppm)

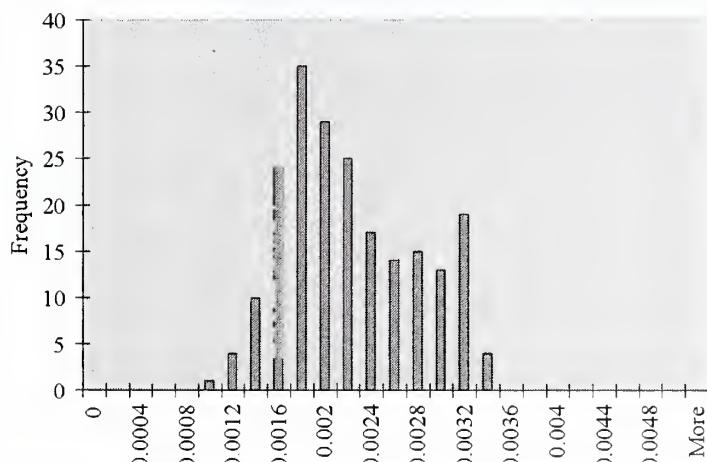
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.14	0.20	0.27	0.37	0.50	0.66	0.86
Max.	0.11	0.22	0.34	0.49	0.69	0.97	1.33	1.78	2.36	3.06

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution



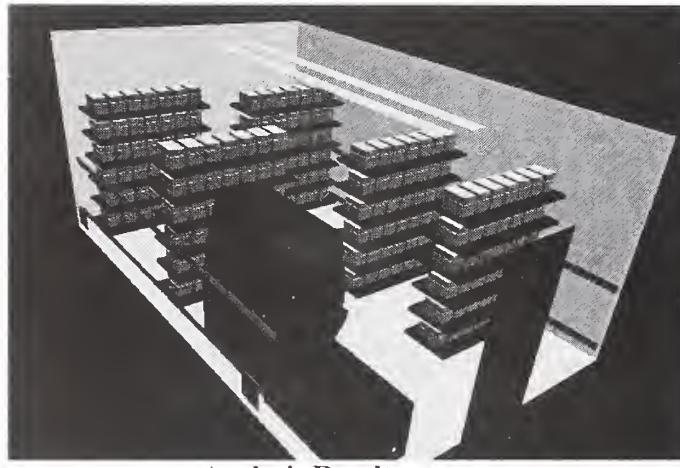
Casename

Case 23**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.70	72.86	1652	60.16%
S.D.	0.47	0.85	375	2.57%
Max.	23.54	74.38	2552	66.04%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.86	1.67	2.58	3.71	5.22	7.24	9.91	13.37	17.76	23.22
Max.	1.33	2.58	3.98	5.74	8.07	11.19	15.32	20.67	27.45	35.88

Room Breathing Zone

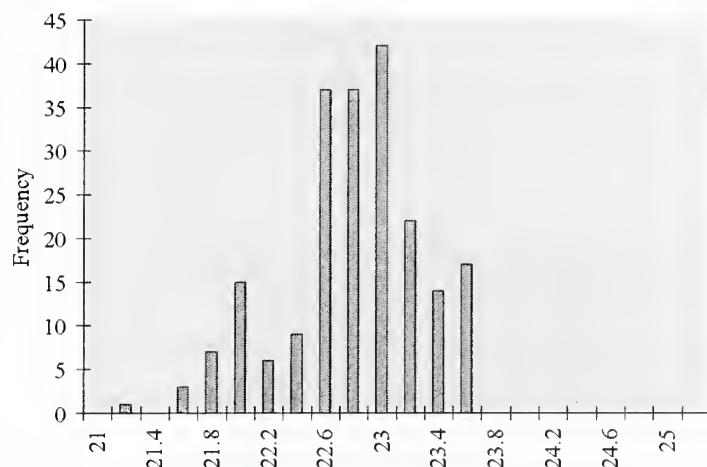
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.76	71.17	63	50.67%
S.D.	0.64	1.15	26	
Max.	27.45	81.41	181	

Room Breathing Zone NH₃ (ppm)

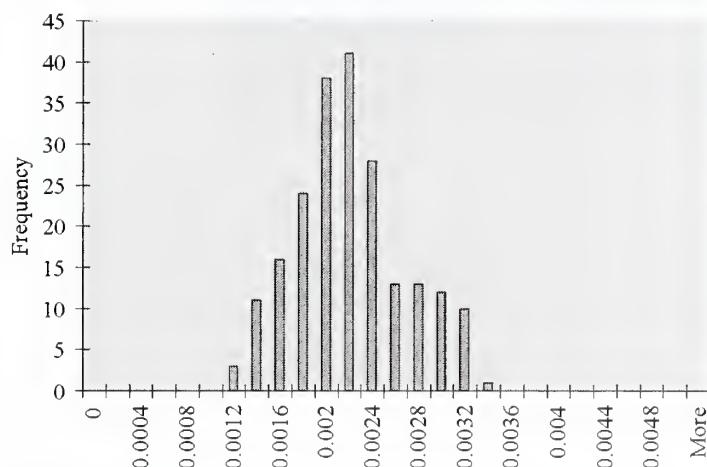
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.51	0.68	0.89
Max.	0.09	0.18	0.28	0.41	0.57	0.79	1.08	1.46	1.94	2.54

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



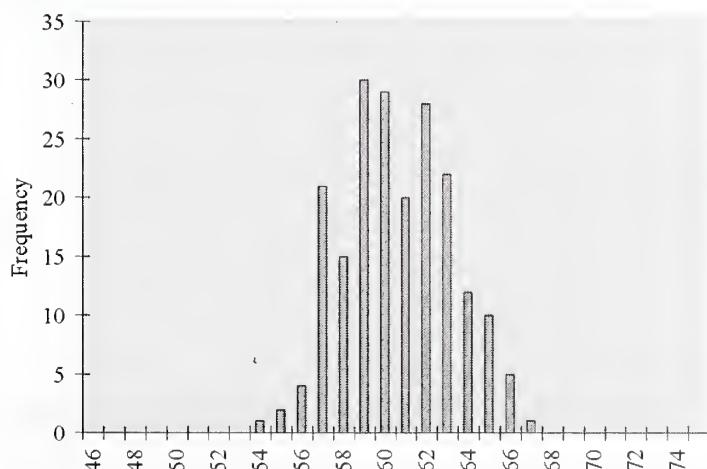
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg \rightarrow ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

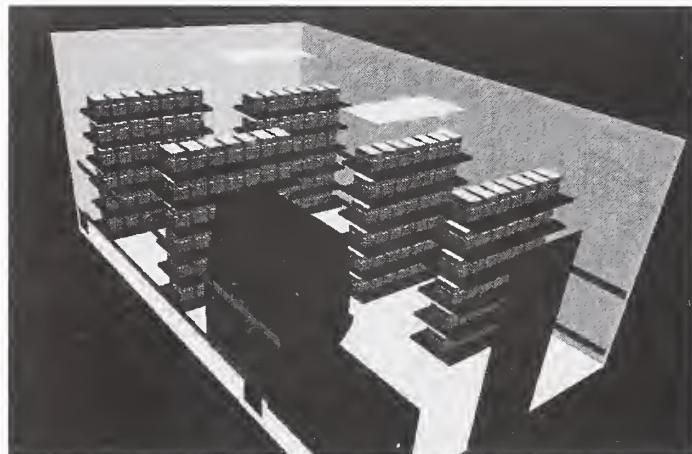
Case 24

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Low	22	50%
Change Station ON	Rack Orientation Perp	Rack Density Single	Number of Mice in Room 1050	Total mass of Mice in Room 21000 gr	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.16	73.68	1883	60.24%
S.D.	0.46	0.83	495	3.53%
Max.	24.13	75.44	3022	67.04%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.98	1.91	2.94	4.24	5.96	8.26	11.30	15.25	20.25	26.47
Max.	1.57	3.06	4.72	6.80	9.56	13.26	18.14	24.47	32.50	42.49

Room Breathing Zone

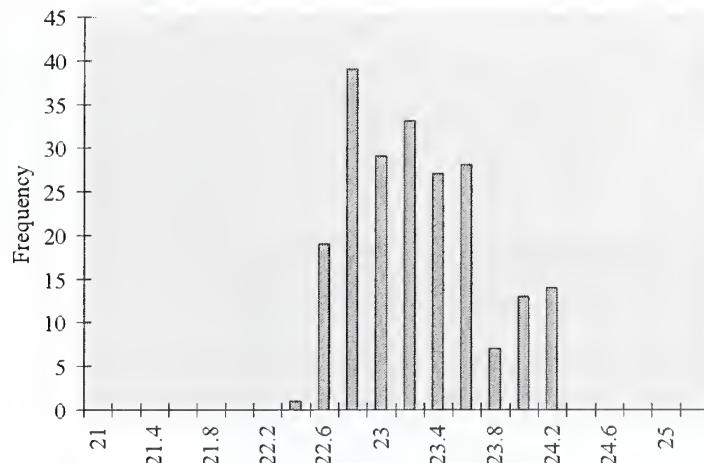
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.10	71.78	81	49.75%
S.D.	0.78	1.41	47	
Max.	27.78	82.00	427	

Room Breathing Zone NH₃ (ppm)

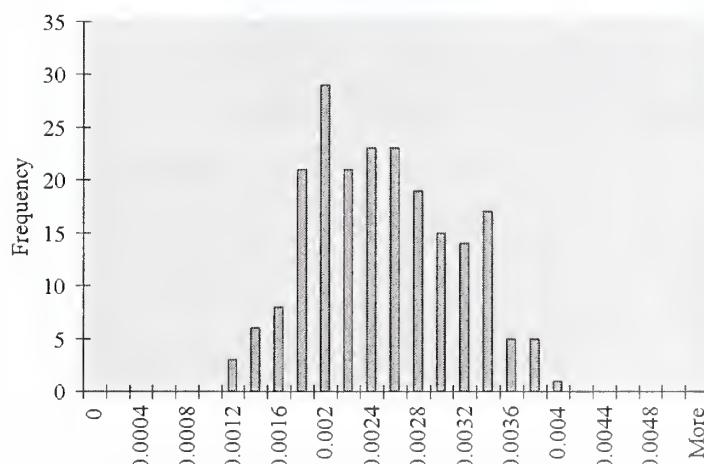
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.08	0.13	0.18	0.26	0.36	0.49	0.66	0.88	1.15
Max.	0.22	0.43	0.67	0.96	1.35	1.87	2.56	3.46	4.59	6.00

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



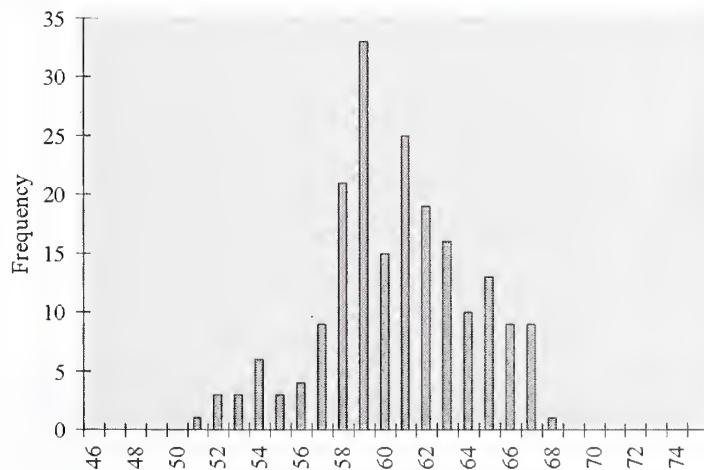
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

Case 25**Description**

Supply Configuration
Radial

Supply Discharge Temperature (°C)
18.8

RH
61%

Exhaust Configuration
Ceiling

Exhaust Temperature (°C)
22

RH
50%

Change Station
ON

Rack Orientation
On wall

Rack Density
Single

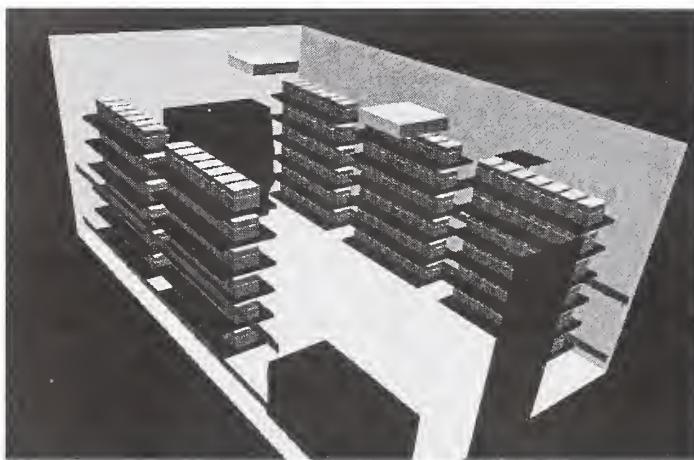
Number of Mice in Room
1050

Total mass of Mice in Room
21000 gr

Room Pressurisation
neg 100cfm

Room ACH
15

Cage Condition
Sealed

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.20	71.96	3008	73.04%
S.D.	0.25	0.45	492	4.17%
Max.	23.07	73.52	3939	80.80%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.64	3.04	4.69	11.05	20.64	31.63	49.49	59.31	67.59	64.80
Max.	2.15	3.99	6.15	14.47	27.02	41.42	64.81	77.66	88.51	84.85

Room Breathing Zone

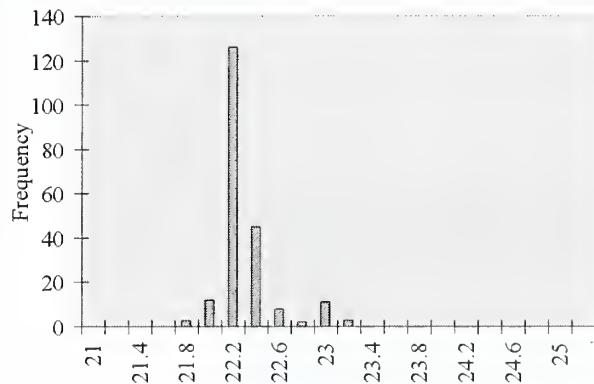
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.30	68.53	60	55.58%
S.D.	0.22	0.40	24	
Max.	21.27	70.28	233	

Room Breathing Zone NH₃ (ppm)

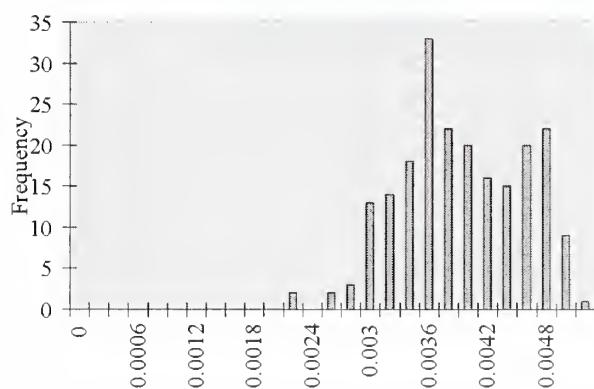
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.22	0.41	0.63	0.99	1.19	1.36	1.30
Max.	0.13	0.24	0.36	0.86	1.60	2.45	3.83	4.59	5.23	5.01

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



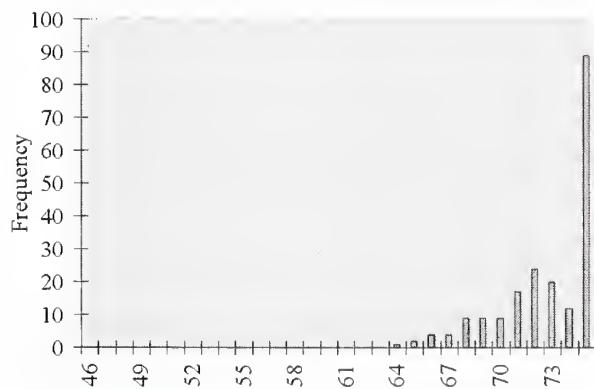
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	429
2	785000	795
3	785000	1225
4	785000	2885
5	785000	5386
6	785000	8256
7	785000	12918
8	785000	15479
9	785000	17641
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



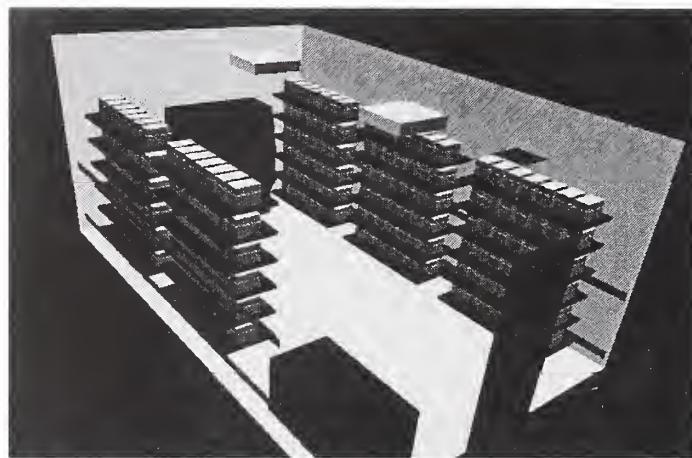
Casename

Case 26**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Sealed

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.14	71.85	3975	81.15%
S.D.	0.38	0.68	422	3.46%
Max.	23.03	73.45	4836	88.54%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	2.25	4.02	6.20	18.42	37.17	58.21	93.38	109.47	120.68	105.66
Max.	2.73	4.90	7.55	22.42	45.23	70.83	113.63	133.21	146.85	128.57

Room Breathing Zone

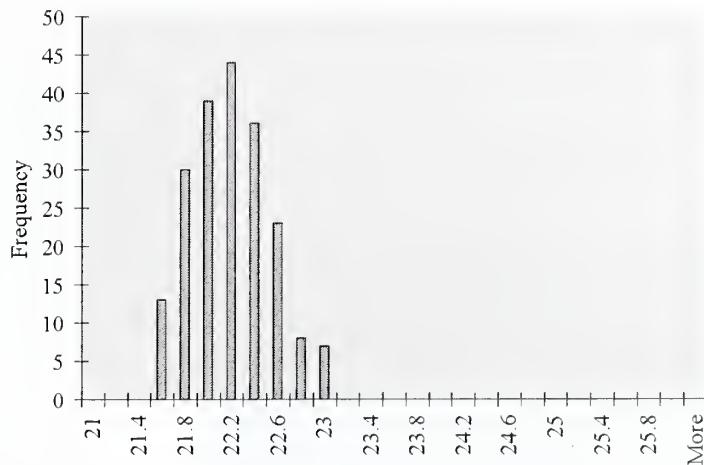
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.40	68.72	35	54.98%
S.D.	0.55	0.99	28	
Max.	21.81	71.27	149	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.05	0.16	0.32	0.51	0.81	0.95	1.05	0.92
Max.	0.08	0.15	0.23	0.69	1.39	2.18	3.50	4.10	4.52	3.96

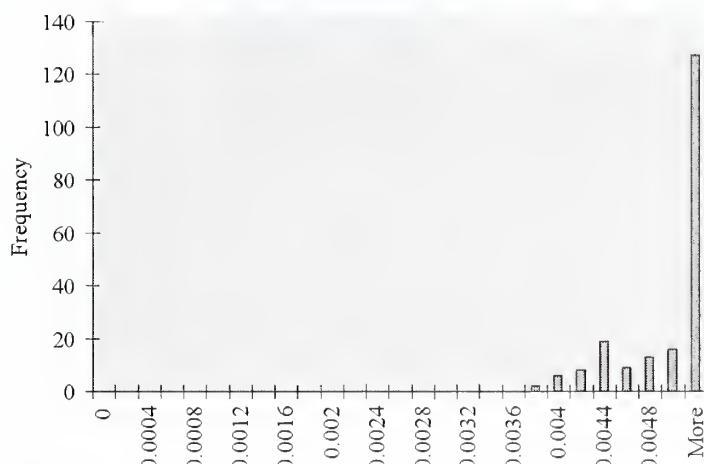
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)



Casename

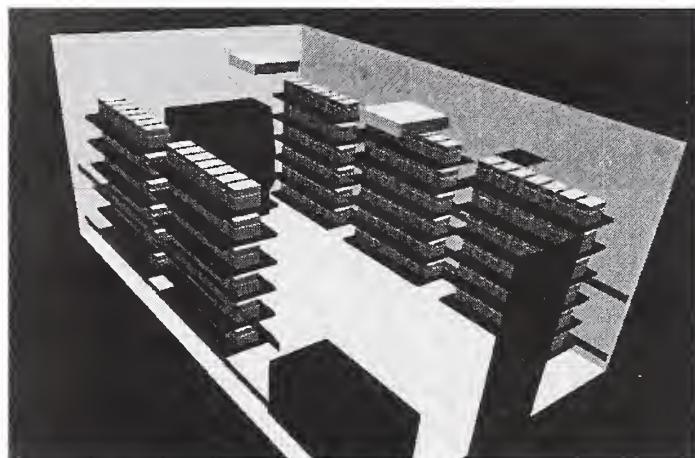
Case 27

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Sealed



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.10	71.79	3171	74.81%
S.D.	0.24	0.43	569	4.79%
Max.	23.12	73.62	4558	86.18%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.75	3.21	4.95	12.31	23.47	36.19	57.03	67.91	76.69	71.78
Max.	2.51	4.61	7.11	17.70	33.74	52.03	81.98	97.63	110.26	103.19

Room Breathing Zone

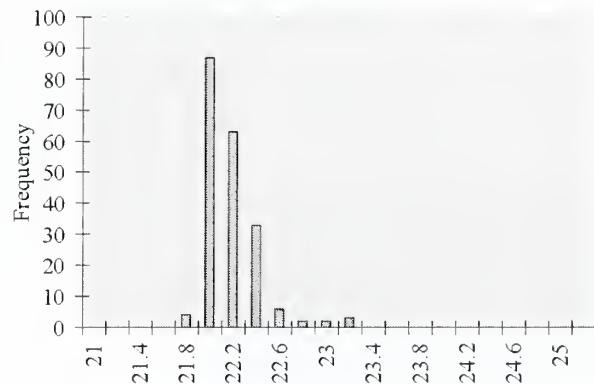
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.31	68.56	61	55.54%
S.D.	0.25	0.46	26	
Max.	21.95	71.51	239	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.24	0.45	0.70	1.10	1.31	1.48	1.39
Max.	0.13	0.24	0.37	0.93	1.77	2.72	4.29	5.11	5.77	5.40

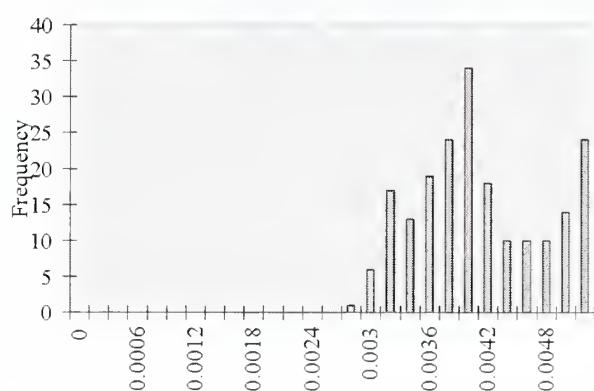
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



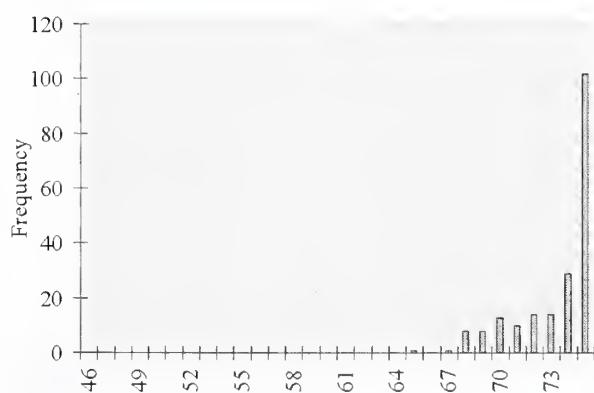
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)



Day	CO ₂	NH ₃
1	785000	432
2	785000	795
3	785000	1225
4	785000	3049
5	785000	5811
6	785000	8960
7	785000	14119
8	785000	16814
9	785000	18988
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

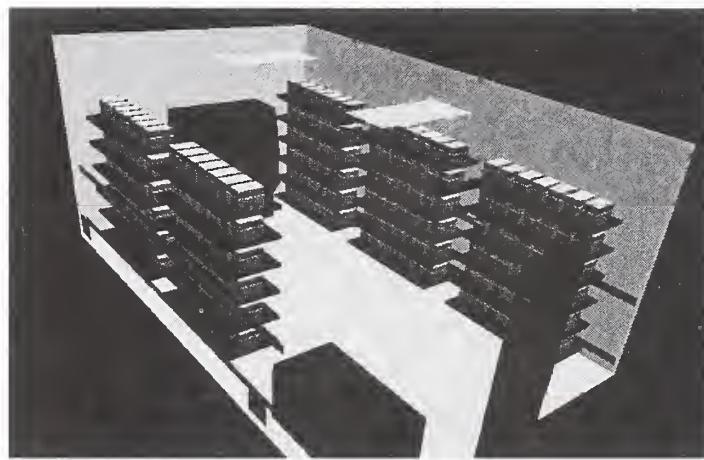


Casename

Case 28

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	16.8	69%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
On wall	Single	1050	21000 gr		

Room ACH
10Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.32	73.97	1749	58.69%
S.D.	0.60	1.08	333	3.37%
Max.	24.56	76.21	2705	65.58%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.77	2.73	3.93	5.53	7.67	10.50	14.16	18.81	24.59
Max.	1.41	2.74	4.22	6.08	8.56	11.86	16.24	21.90	29.09	38.02

Room Breathing Zone

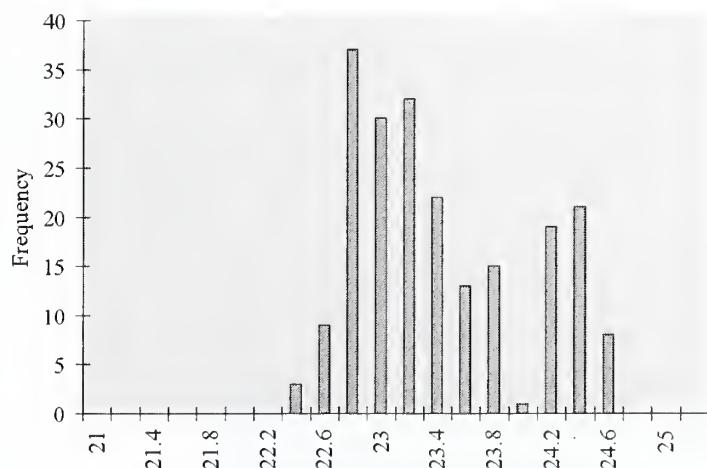
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.28	72.10	113	49.45%
S.D.	0.61	1.10	29	
Max.	23.38	74.09	307	

Room Breathing Zone NH₃ (ppm)

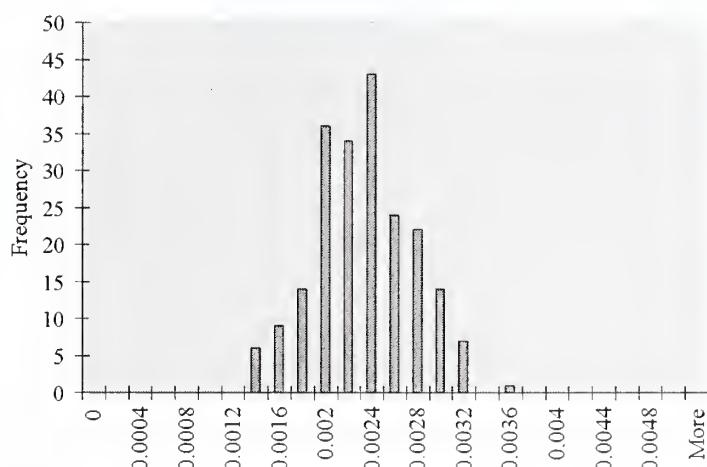
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.11	0.18	0.25	0.36	0.50	0.68	0.92	1.22	1.59
Max.	0.16	0.31	0.48	0.69	0.97	1.35	1.84	2.48	3.30	4.31

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

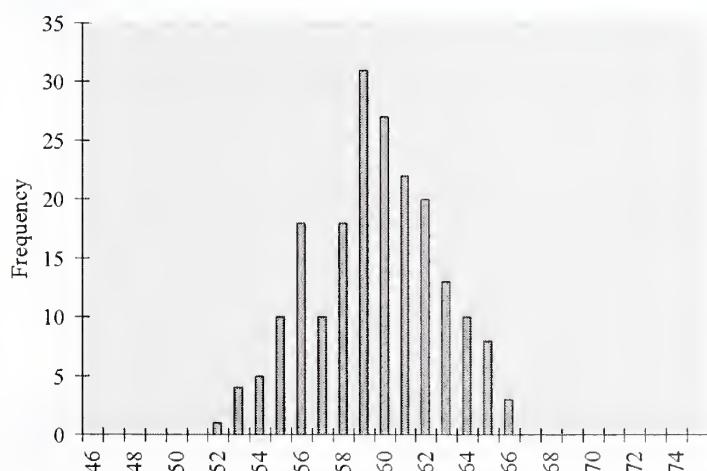


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

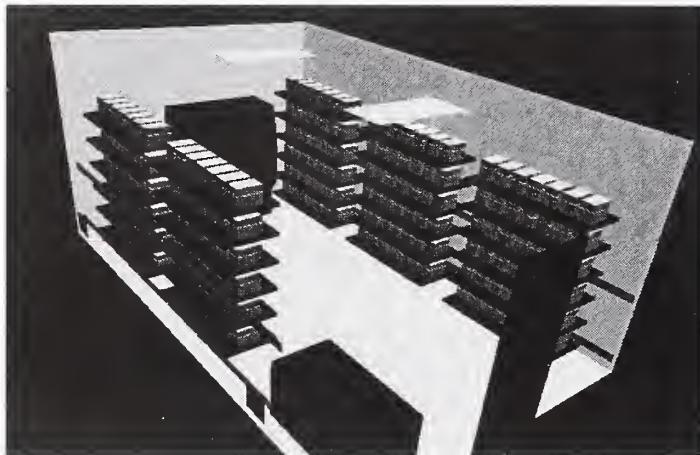


Casename

Case 29

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	11	65%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
Room ACH					
5					
Cage Condition					
Top On					



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.64	72.75	1764	44.37%
S.D.	0.54	0.97	314	2.89%
Max.	23.83	74.89	2556	50.77%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.92	1.79	2.75	3.97	5.58	7.74	10.59	14.28	18.97	24.80
Max.	1.33	2.59	3.99	5.75	8.08	11.21	15.34	20.70	27.49	35.93

Room Breathing Zone

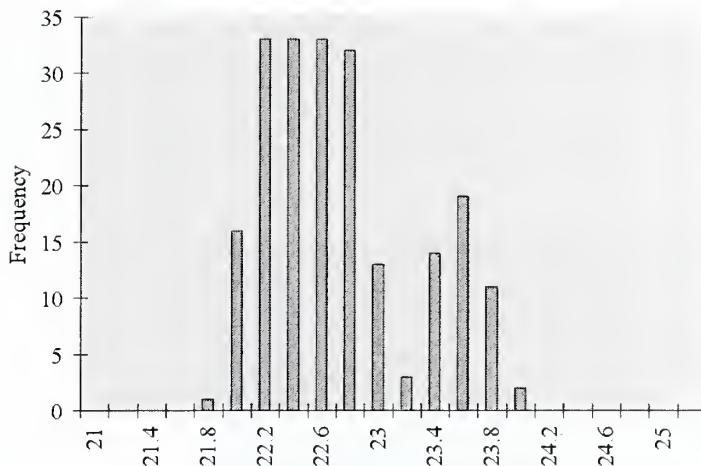
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.19	70.14	140	53.19%
S.D.	0.53	0.96	33	
Max.	22.18	71.93	267	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.07	0.14	0.22	0.32	0.44	0.62	0.84	1.14	1.51	1.97
Max.	0.14	0.27	0.42	0.60	0.85	1.17	1.60	2.16	2.88	3.76

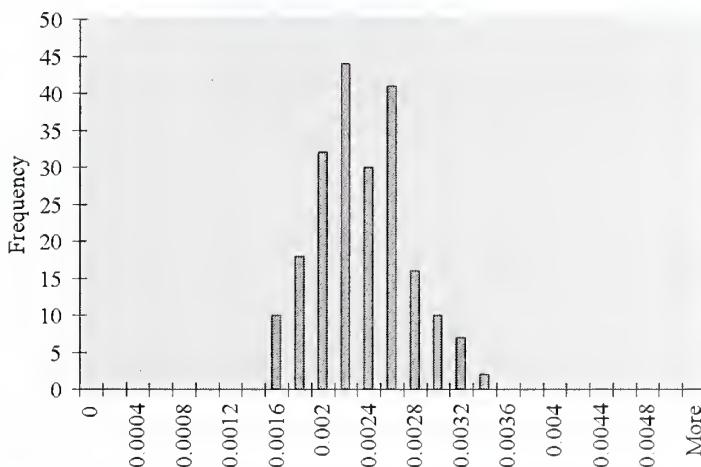
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Casename

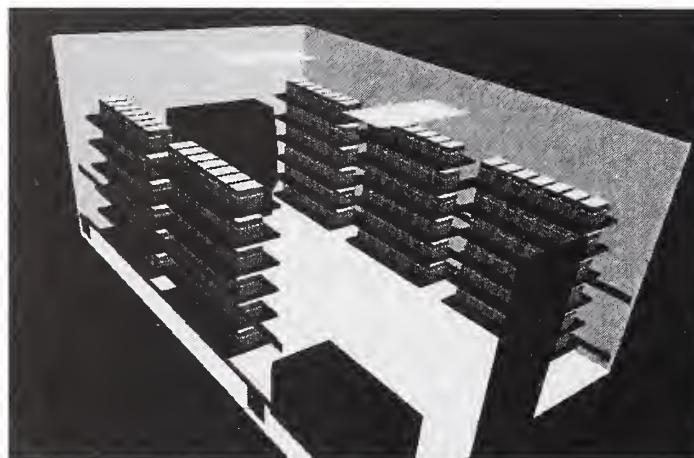
Case 30

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	19.8	57%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
20

Cage Condition
Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.64	74.56	1667	56.87%
S.D.	0.47	0.84	386	3.17%
Max.	24.70	76.47	2576	63.64%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.87	1.69	2.60	3.75	5.27	7.31	10.01	13.50	17.93	23.44
Max.	1.34	2.61	4.02	5.79	8.15	11.30	15.47	20.86	27.71	36.22

Room Breathing Zone

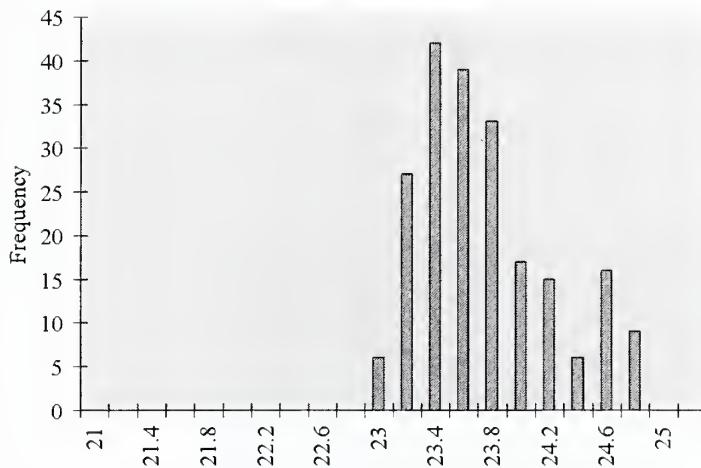
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.57	72.63	64	48.16%
S.D.	0.49	0.89	26	
Max.	24.17	75.50	252	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.14	0.20	0.28	0.38	0.52	0.68	0.89
Max.	0.13	0.25	0.39	0.57	0.80	1.10	1.51	2.04	2.71	3.54

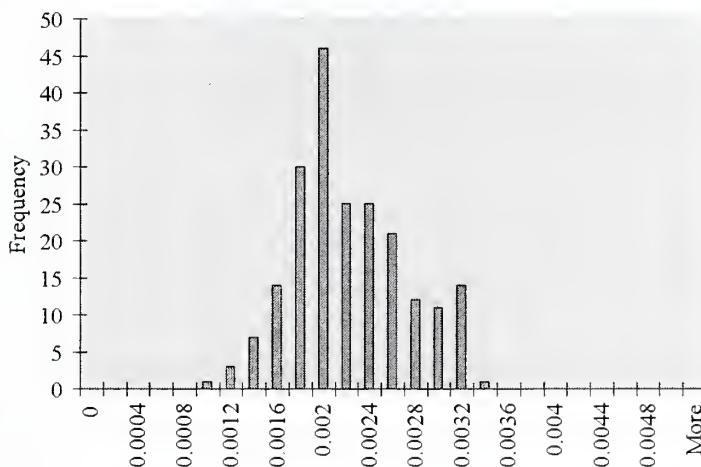
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



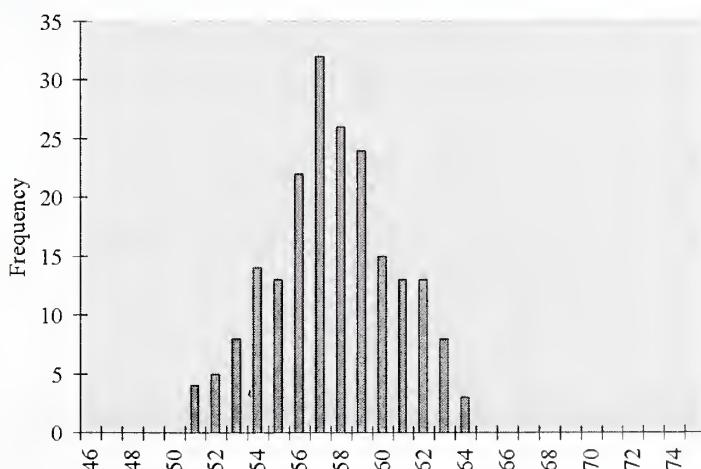
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

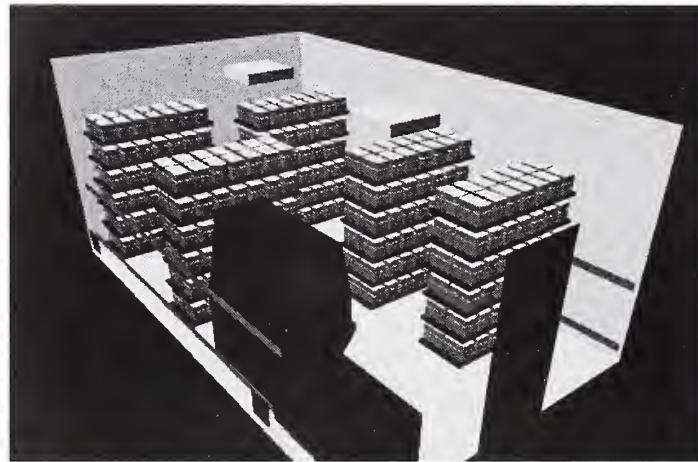


Casename

Case 31

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	17.5	66%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.67	72.80	1938	61.40%
S.D.	0.28	0.50	465	3.41%
Max.	23.39	74.09	2839	67.52%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.01	1.96	3.02	4.45	6.37	8.89	12.30	16.44	21.59	27.73
Max.	1.48	2.87	4.43	6.52	9.33	13.03	18.02	24.08	31.63	40.61

Room Breathing Zone

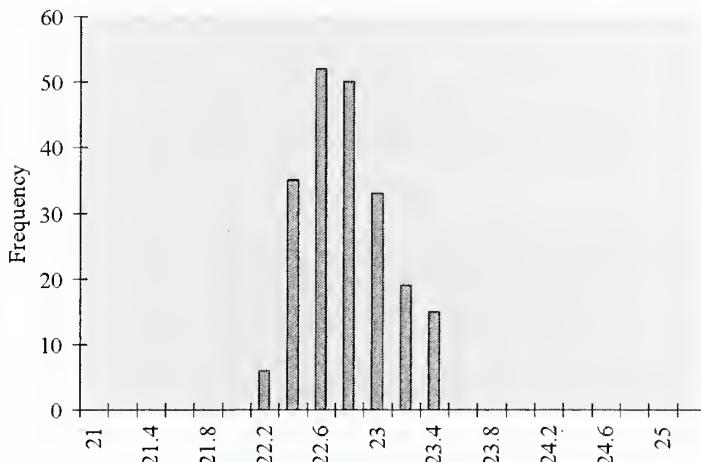
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.37	70.46	107	52.32%
S.D.	0.73	1.31	43	
Max.	28.10	82.59	315	

Room Breathing Zone NH₃ (ppm)

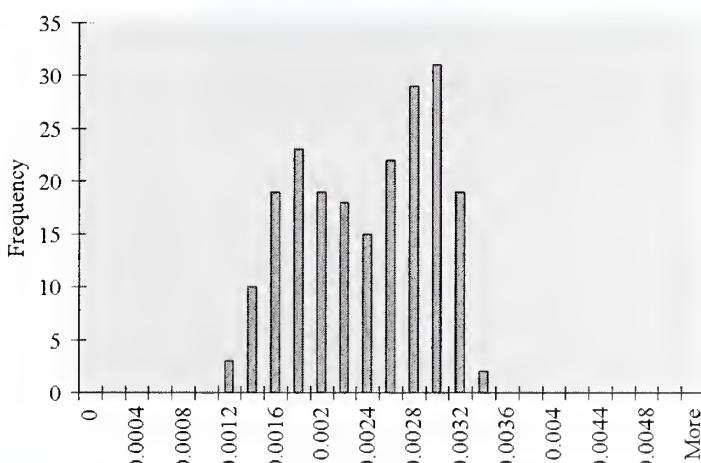
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.11	0.17	0.24	0.35	0.49	0.68	0.90	1.19	1.52
Max.	0.16	0.32	0.49	0.72	1.04	1.45	2.00	2.68	3.51	4.51

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



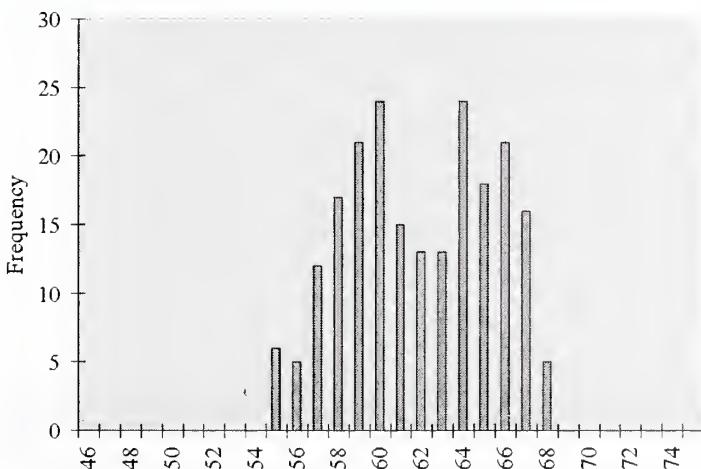
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors (kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	409
2	785000	795
3	785000	1225
4	785000	1803
5	785000	2579
6	785000	3602
7	785000	4984
8	785000	6658
9	785000	8747
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

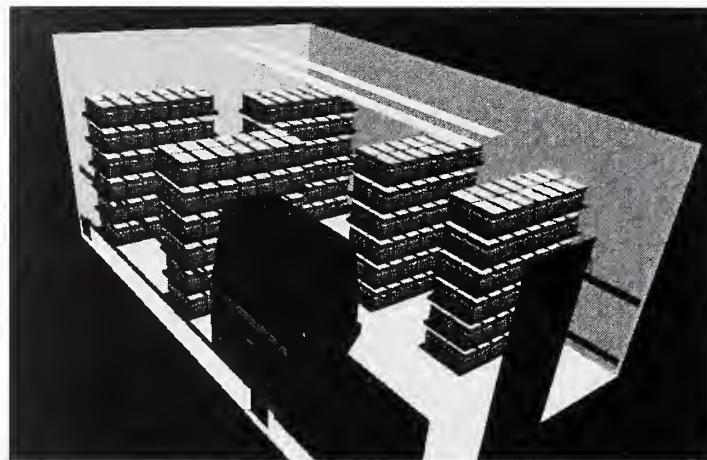


Casename

Case 32

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	17.5	66%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.90	73.22	1747	59.10%
S.D.	0.52	0.93	426	2.60%
Max.	23.96	75.12	2789	65.01%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.77	2.73	3.93	5.53	7.66	10.49	14.15	18.79	24.57
Max.	1.45	2.82	4.35	6.27	8.82	12.23	16.74	22.59	30.00	39.21

Room Breathing Zone

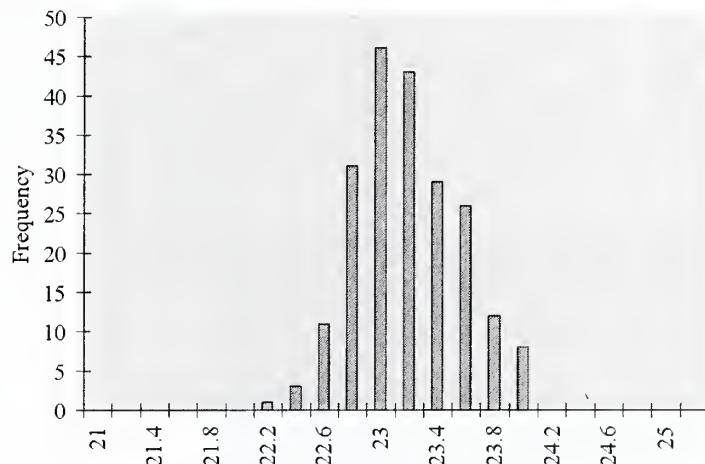
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.96	71.54	125	50.53%
S.D.	0.66	1.19	51	
Max.	27.92	82.26	337	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.13	0.19	0.28	0.39	0.55	0.75	1.01	1.34	1.75
Max.	0.18	0.34	0.53	0.76	1.07	1.48	2.02	2.73	3.63	4.74

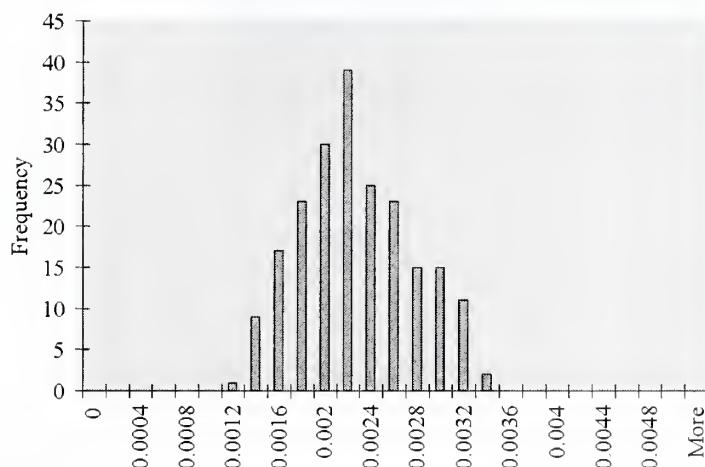
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



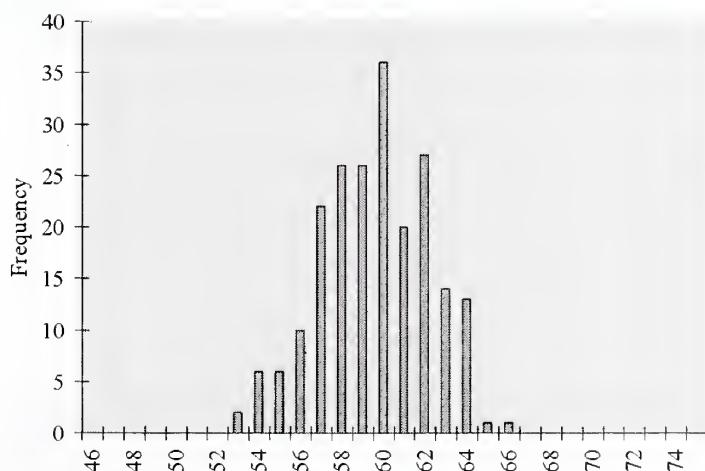
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

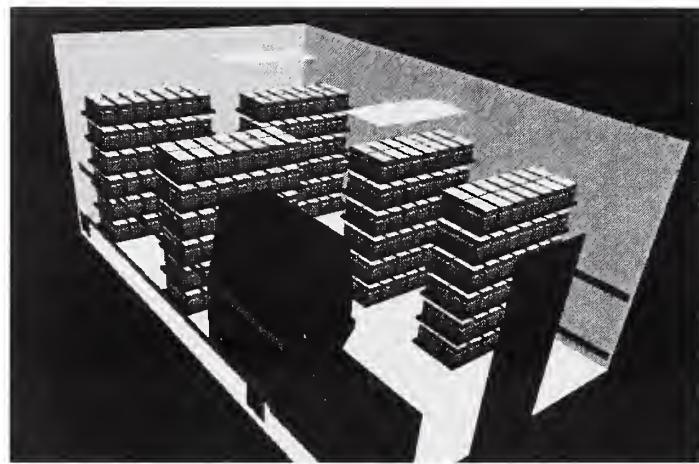
Case 33

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	17.5	66%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature	CO ₂	RH
	°C	°F	(ppm)
Mean	23.16	73.68	1974
S.D.	0.36	0.64	485
Max.	24.12	75.41	3133
			59.06%
			2.81%
			65.78%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.03	2.00	3.08	4.44	6.24	8.66	11.85	15.98	21.23	27.75
Max.	1.63	3.17	4.89	7.05	9.91	13.74	18.81	25.37	33.69	44.04

Room Breathing Zone

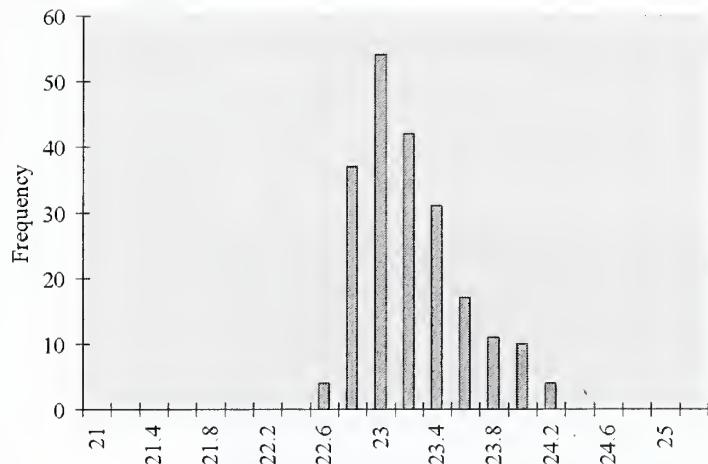
	Temperature	CO ₂	RH
	°C	°F	(ppm)
Mean	21.97	71.54	143
S.D.	0.74	1.33	67
Max.	27.68	81.82	433
			50.67%

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.07	0.14	0.22	0.32	0.45	0.63	0.86	1.16	1.54	2.01
Max.	0.22	0.44	0.67	0.97	1.37	1.90	2.60	3.50	4.65	6.08

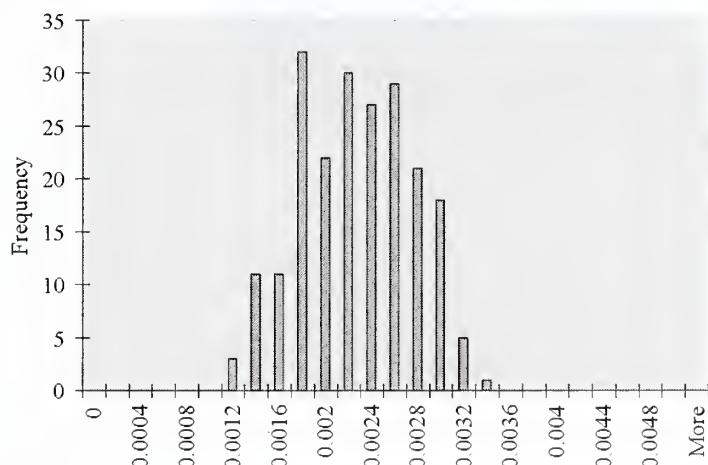
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



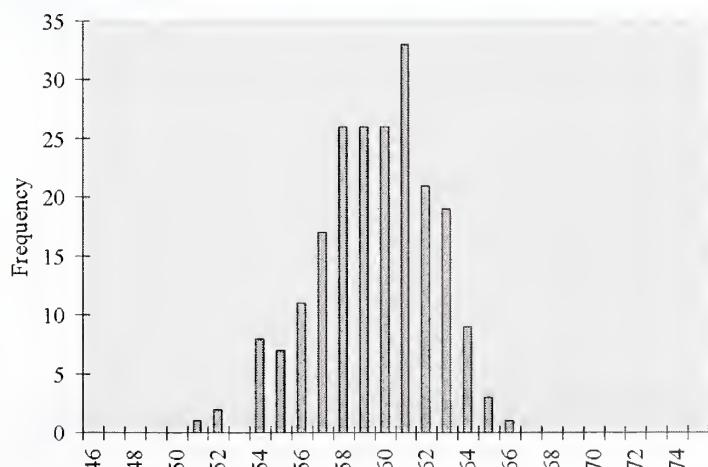
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg \rightarrow ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

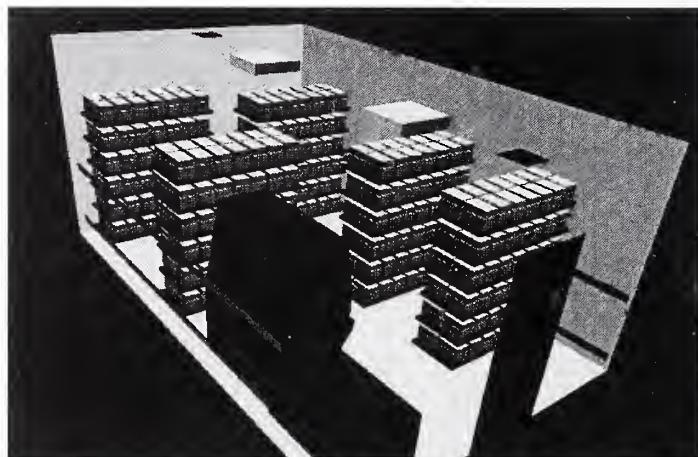


Casename

Case 34

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	17.5	66%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
Perp		Double	2100	42000 gr	

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.36	70.45	1896	67.24%
S.D.	0.27	0.49	374	2.62%
Max.	22.02	71.63	2689	72.42%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.01	1.92	2.96	5.66	9.63	14.34	21.65	26.77	31.90	34.00
Max.	1.44	2.72	4.20	8.03	13.66	20.34	30.71	37.96	45.24	48.23

Room Breathing Zone

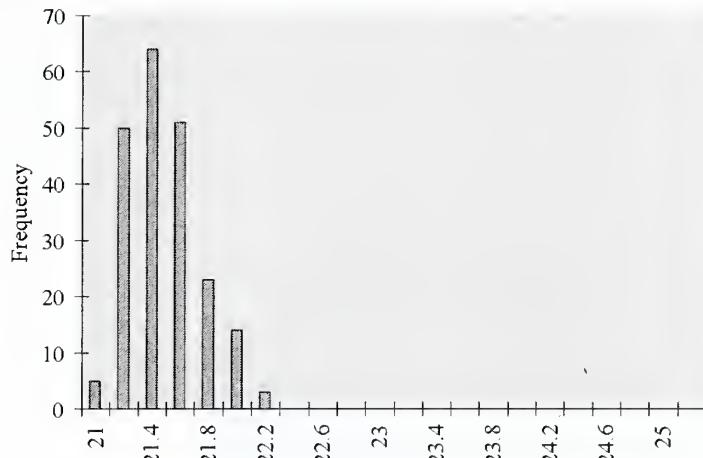
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.96	67.93	136	57.48%
S.D.	0.93	1.67	56	
Max.	26.86	80.35	318	

Room Breathing Zone NH3 (ppm)

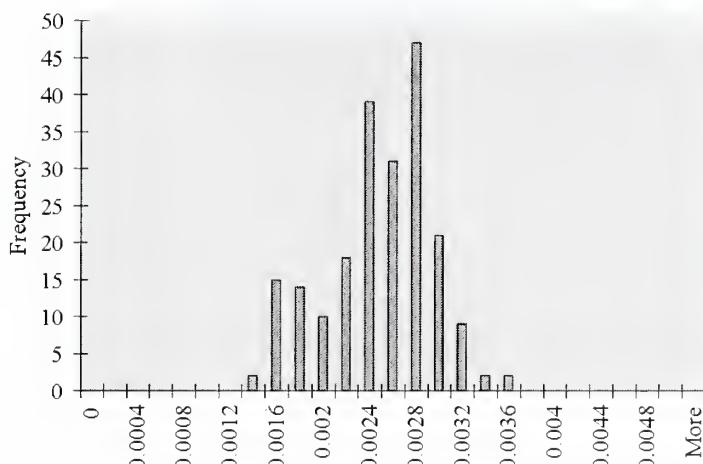
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.07	0.14	0.21	0.41	0.69	1.03	1.55	1.92	2.29	2.44
Max.	0.17	0.32	0.50	0.95	1.61	2.40	3.63	4.49	5.35	5.70

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

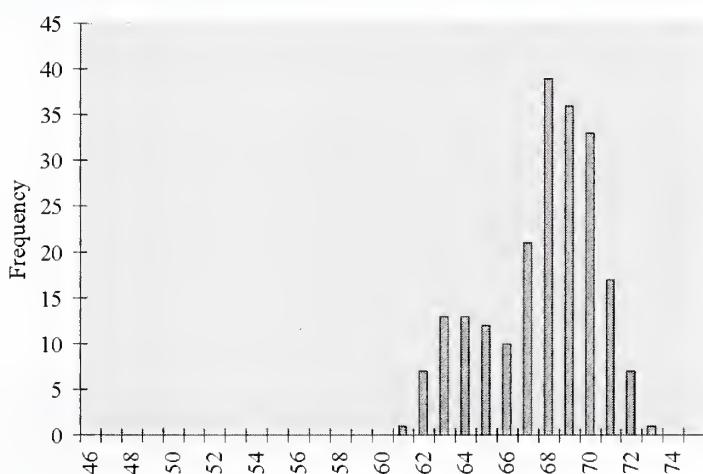


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	419
2	785000	795
3	785000	1225
4	785000	2346
5	785000	3988
6	785000	5938
7	785000	8966
8	785000	11085
9	785000	13210
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



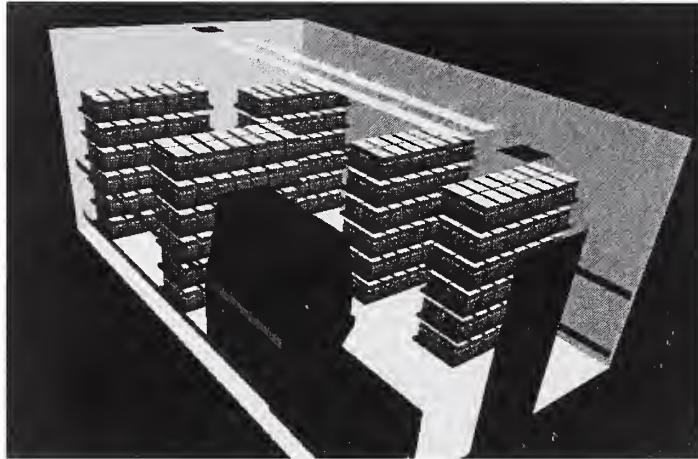
Casename

Case 35**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	17.5	66%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.33	70.40	1761	65.51%
S.D.	0.47	0.84	403	2.79%
Max.	22.43	72.37	2691	71.14%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.93	1.78	2.75	4.90	8.01	11.77	17.46	21.92	26.67	29.69
Max.	1.43	2.72	4.20	7.49	12.24	17.99	26.70	33.51	40.76	45.38

Room Breathing Zone

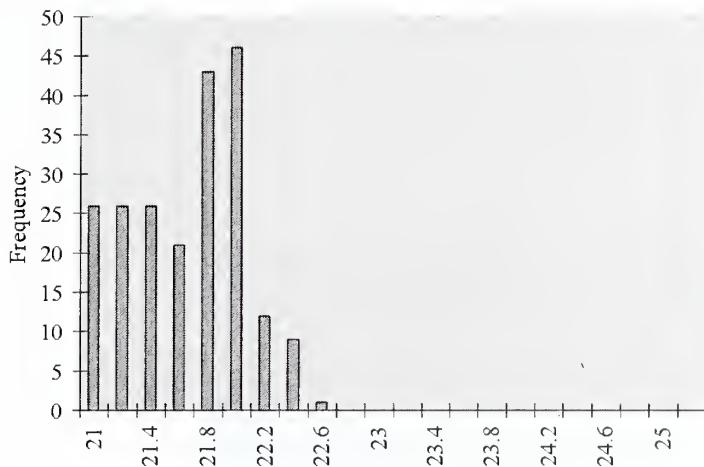
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.96	67.92	122	57.37%
S.D.	1.01	1.82	59	
Max.	25.93	78.67	291	

Room Breathing Zone NH₃ (ppm)

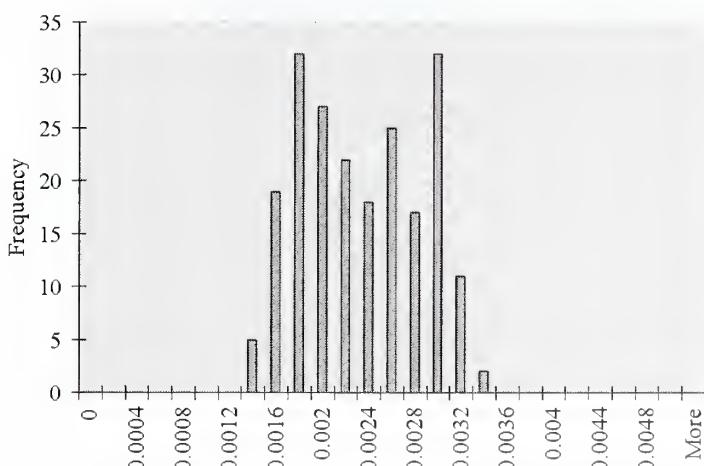
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.12	0.19	0.34	0.56	0.82	1.21	1.52	1.85	2.06
Max.	0.15	0.29	0.45	0.81	1.32	1.95	2.89	3.63	4.41	4.91

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

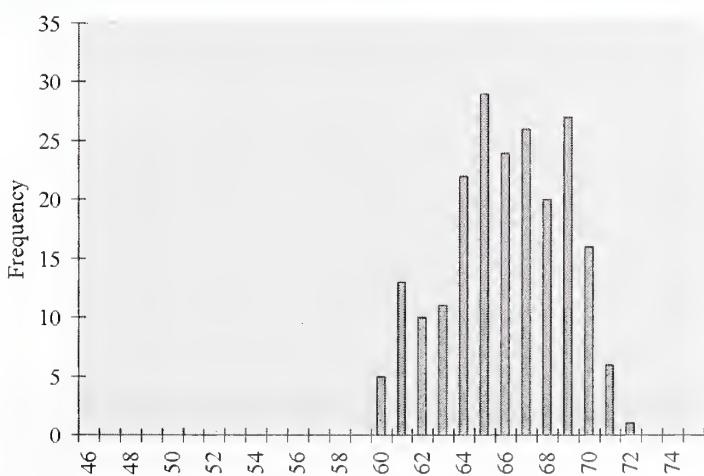


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	416
2	785000	795
3	785000	1225
4	785000	2185
5	785000	3571
6	785000	5246
7	785000	7787
8	785000	9774
9	785000	11889
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



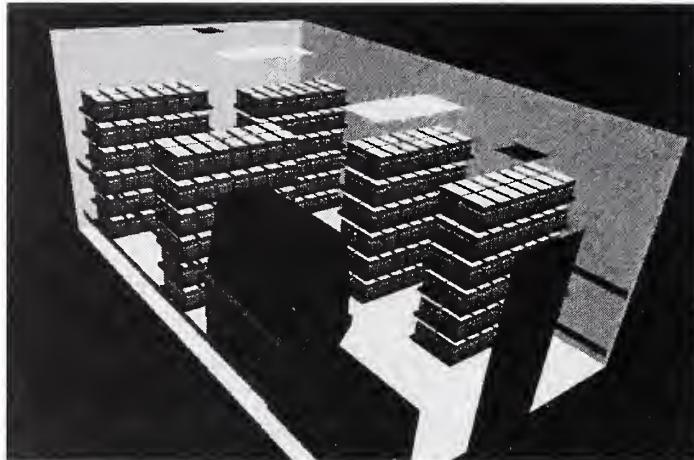
Casename

Case 36**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	17.5	66%	Ceiling	22	50%
Change Station ON	Rack Orientation Perp	Rack Density Double	Number of Mice in Room 2100	Total mass of Mice in Room 42000 gr	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.47	70.64	1878	66.47%
S.D.	0.27	0.49	351	2.61%
Max.	22.20	71.97	2594	71.66%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.00	1.90	2.93	5.44	9.09	13.47	20.19	25.12	30.19	32.78
Max.	1.38	2.63	4.05	7.51	12.56	18.60	27.88	34.69	41.70	45.28

Room Breathing Zone

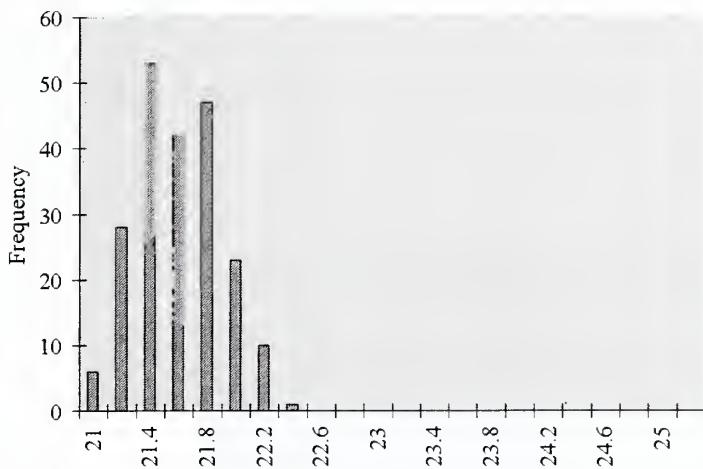
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.90	67.81	134	57.69%
S.D.	0.97	1.74	59	
Max.	25.63	78.13	303	

Room Breathing Zone NH3 (ppm)

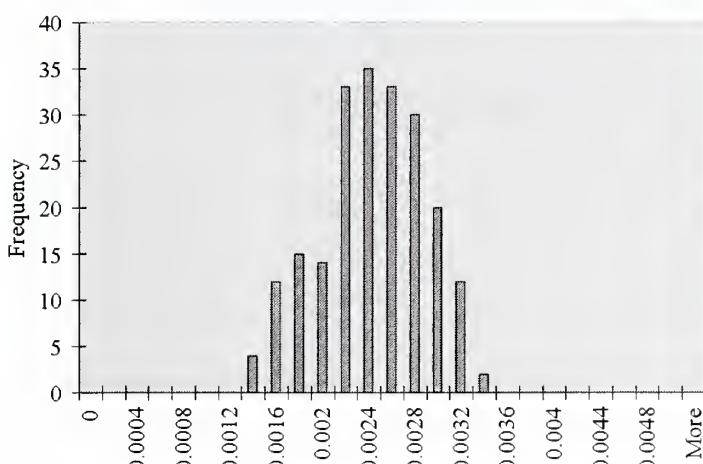
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.07	0.14	0.21	0.39	0.65	0.96	1.44	1.79	2.15	2.34
Max.	0.16	0.31	0.47	0.88	1.47	2.18	3.26	4.06	4.88	5.30

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



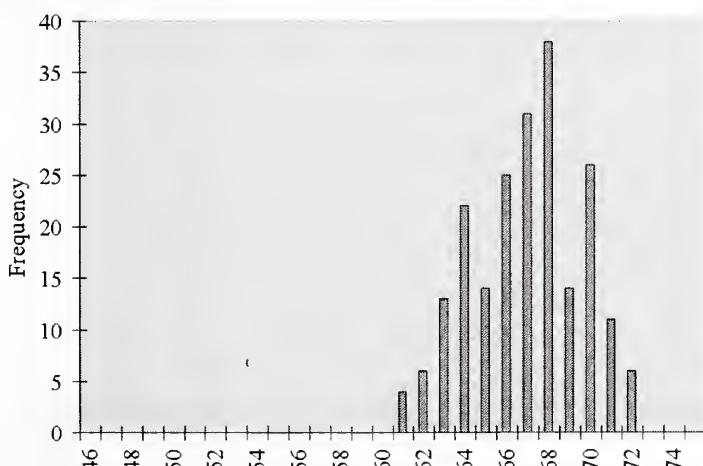
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	418
2	785000	795
3	785000	1225
4	785000	2274
5	785000	3802
6	785000	5629
7	785000	8439
8	785000	10500
9	785000	12620
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

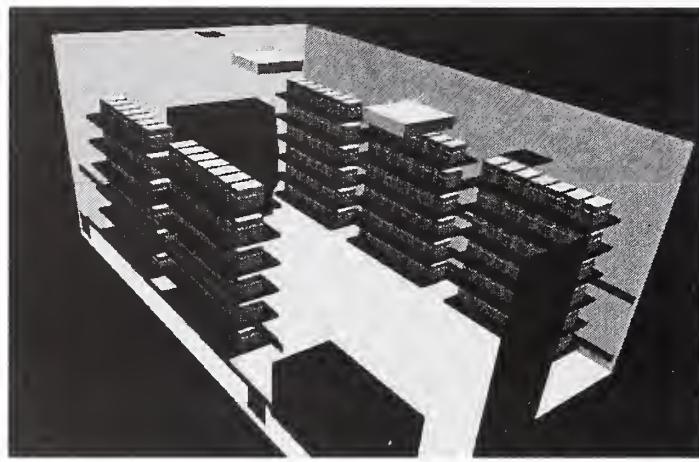


Casename

Case 37

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling/Low 50/50	22	50%
Change Station ON	Rack Orientation On wall	Rack Density Single	Number of Mice in Room 1050	Total mass of Mice in Room 21000 gr	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.27	72.08	1715	62.35%
S.D.	0.24	0.44	302	2.42%
Max.	23.04	73.48	2244	66.63%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.90	1.74	2.68	4.13	6.14	8.70	12.31	16.12	20.70	25.55
Max.	1.17	2.27	3.50	5.41	8.03	11.38	16.10	21.09	27.08	33.42

Room Breathing Zone

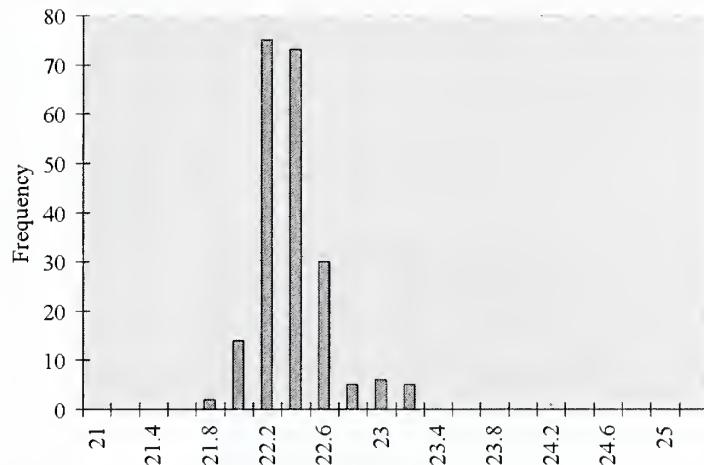
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.70	69.25	59	54.16%
S.D.	0.22	0.40	26	
Max.	21.76	71.16	178	

Room Breathing Zone NH₃ (ppm)

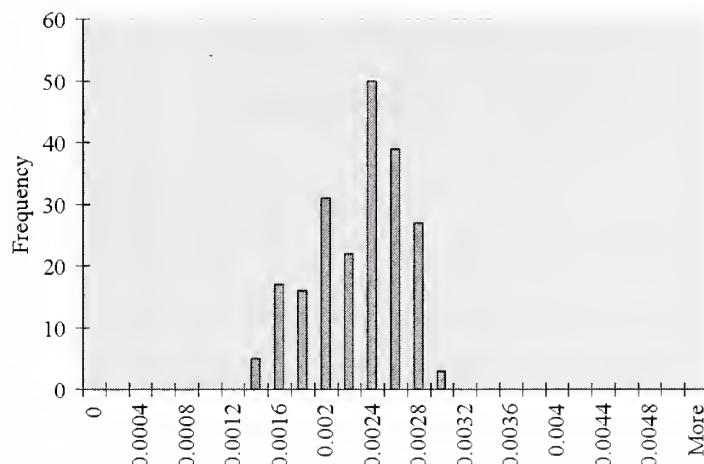
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.14	0.21	0.30	0.42	0.55	0.71	0.87
Max.	0.09	0.18	0.28	0.43	0.64	0.90	1.28	1.68	2.15	2.66

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



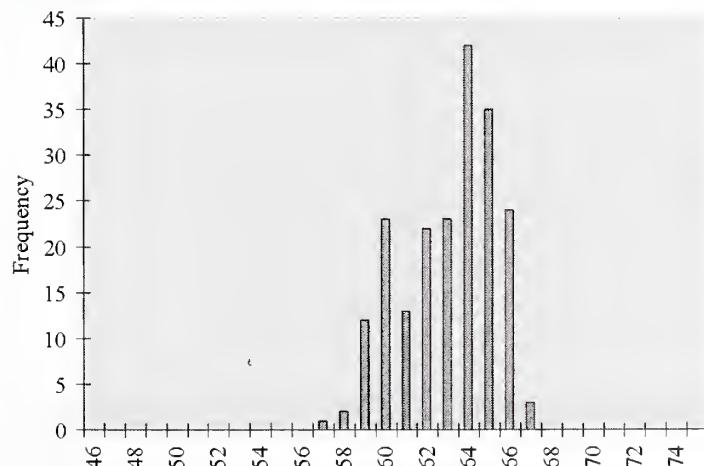
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1891
5	785000	2808
6	785000	3983
7	785000	5632
8	785000	7379
9	785000	9473
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

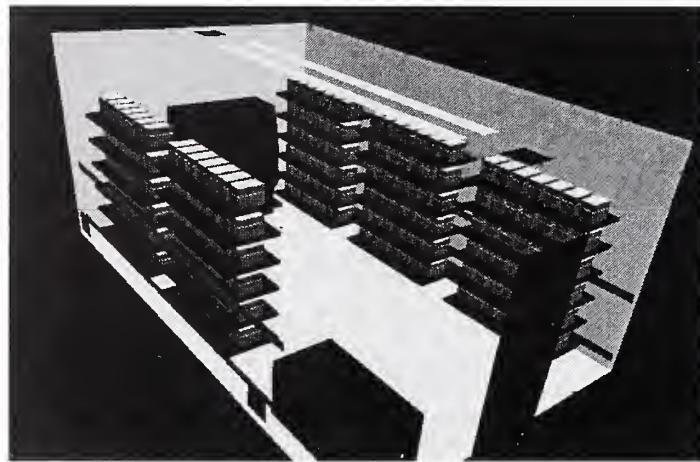
Case 38

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling/Low 50/50	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.39	72.29	1776	62.36%
S.D.	0.29	0.53	342	2.50%
Max.	23.31	73.96	2666	68.62%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.93	1.80	2.77	4.28	6.36	9.02	12.75	16.71	21.45	26.46
Max.	1.39	2.70	4.16	6.42	9.54	13.54	19.15	25.08	32.19	39.73

Room Breathing Zone

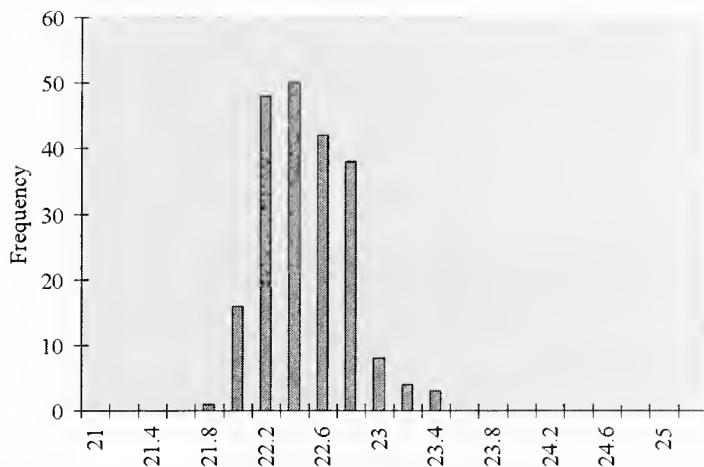
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.77	69.38	62	53.95%
S.D.	0.26	0.47	21	
Max.	22.03	71.66	197	

Room Breathing Zone NH₃ (ppm)

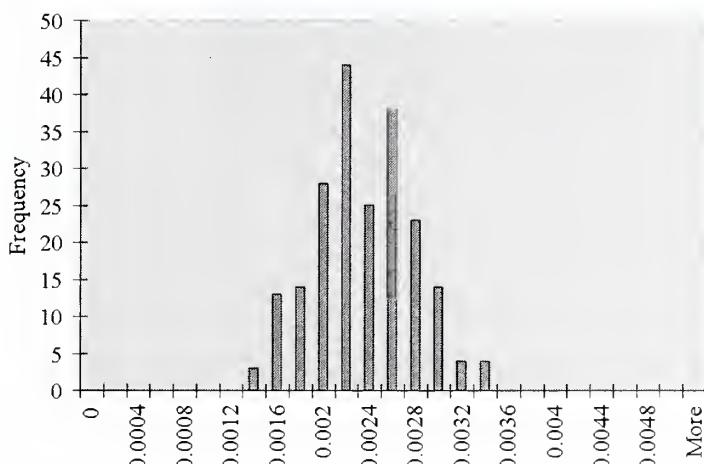
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.15	0.22	0.32	0.45	0.59	0.75	0.93
Max.	0.10	0.20	0.31	0.47	0.70	1.00	1.41	1.85	2.38	2.93

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

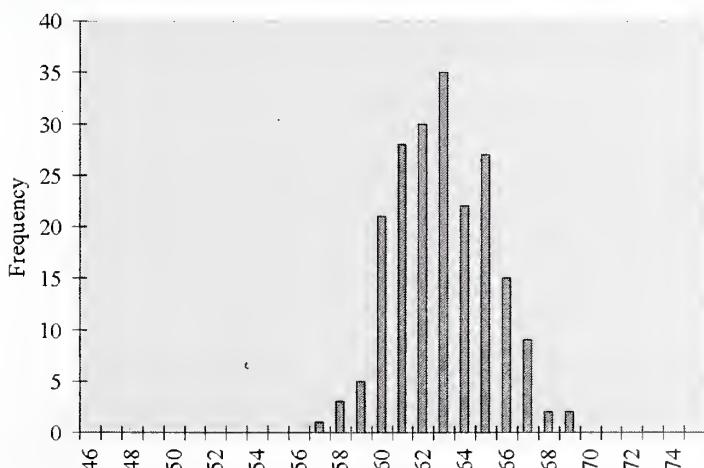


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1892
5	785000	2811
6	785000	3986
7	785000	5639
8	785000	7386
9	785000	9481
10	785000	11384

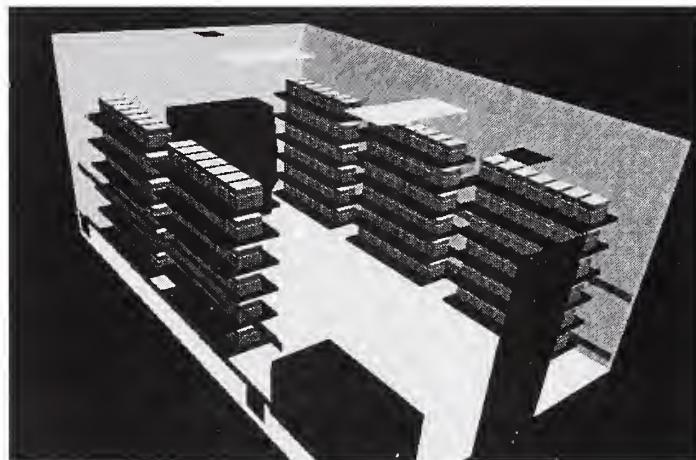
Cage occupied zone average relative humidity (%) distribution



Casename

Case 39**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling/Low 50/50	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm
Room ACH					
15					
Cage Condition					
Top On					

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.39	72.30	1848	62.92%
S.D.	0.26	0.47	331	2.51%
Max.	23.14	73.65	2684	68.59%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.97	1.87	2.88	4.58	6.94	9.92	14.18	18.39	23.33	28.19
Max.	1.41	2.72	4.19	6.65	10.08	14.40	20.59	26.72	33.89	40.94

Room Breathing Zone

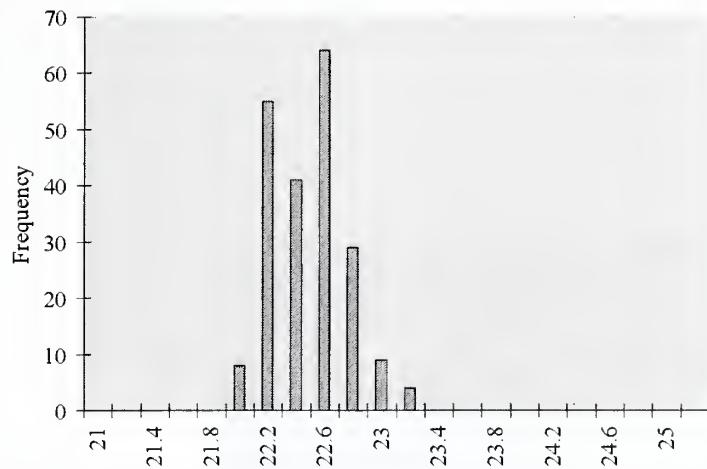
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.77	69.38	71	54.02%
S.D.	0.33	0.60	31	
Max.	22.24	72.03	249	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.18	0.27	0.38	0.55	0.71	0.90	1.08
Max.	0.13	0.25	0.39	0.62	0.94	1.34	1.91	2.48	3.15	3.80

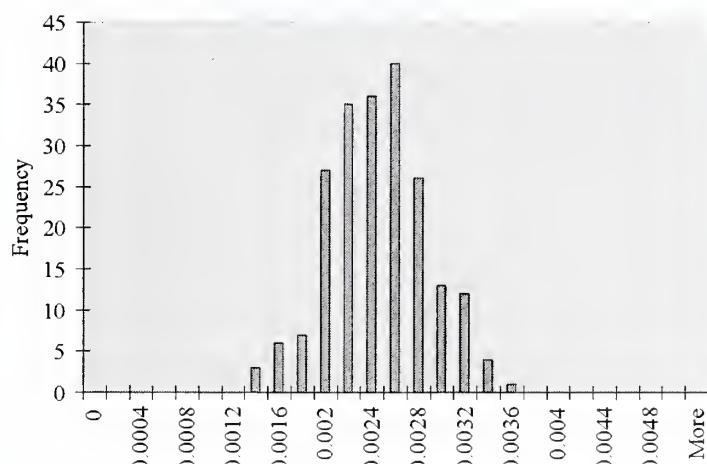
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



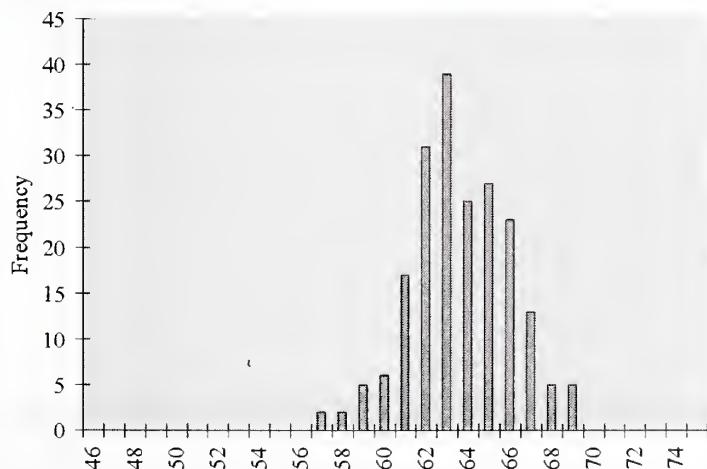
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	412
2	785000	795
3	785000	1225
4	785000	1944
5	785000	2947
6	785000	4212
7	785000	6023
8	785000	7813
9	785000	9911
10	785000	11384

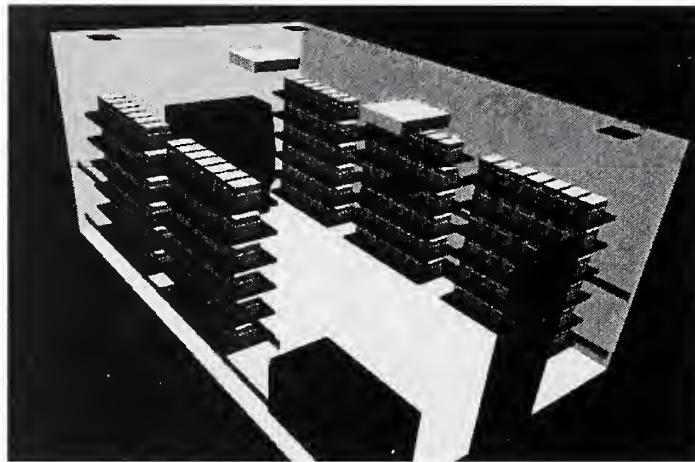
Cage occupied zone average relative humidity (%) distribution



Casename

Case 40**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling x4	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.18	71.92	1975	64.79%
S.D.	0.30	0.54	326	2.55%
Max.	23.11	73.60	2778	70.34%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.04	2.00	3.08	5.33	8.55	12.48	18.36	23.22	28.53	32.42
Max.	1.47	2.81	4.34	7.50	12.02	17.55	25.82	32.66	40.12	45.60

Room Breathing Zone

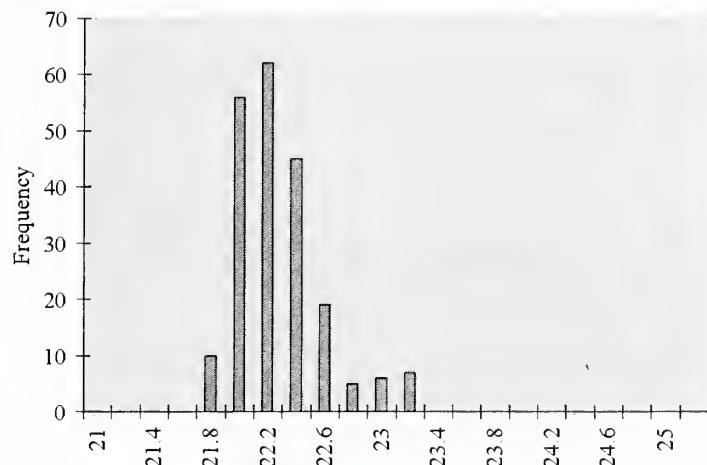
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.54	68.97	21	54.36%
S.D.	0.25	0.45	9	
Max.	21.53	70.75	85	

Room Breathing Zone NH₃ (ppm)

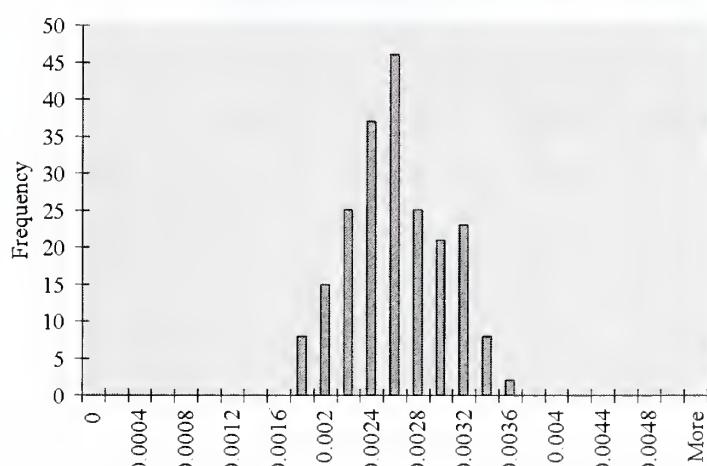
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.01	0.02	0.03	0.06	0.09	0.13	0.20	0.25	0.31	0.35
Max.	0.05	0.09	0.13	0.23	0.37	0.54	0.79	1.00	1.23	1.40

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



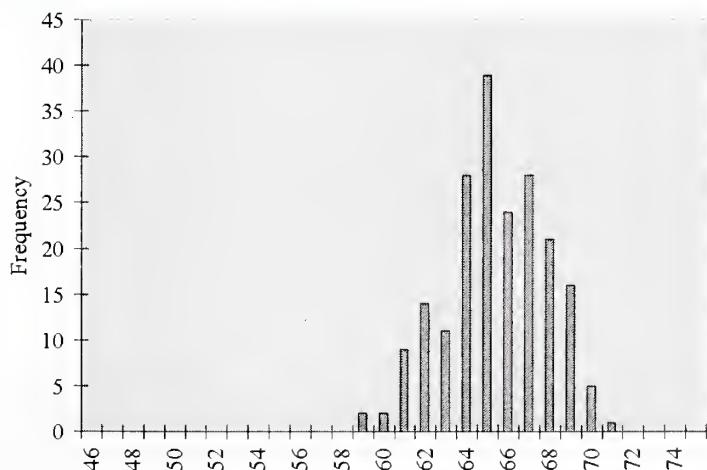
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2118
5	785000	3396
6	785000	4957
7	785000	7294
8	785000	9227
9	785000	11337
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



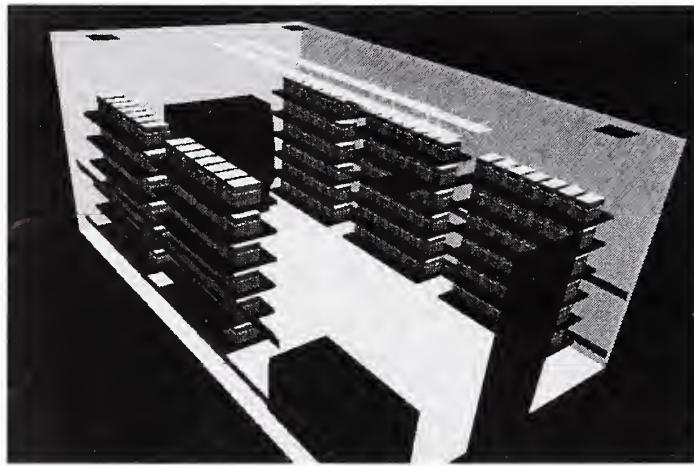
Casename

Case 41**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling x4	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.23	72.02	1690	62.28%
S.D.	0.26	0.47	298	2.30%
Max.	22.88	73.19	2381	67.44%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.88	1.71	2.64	4.06	6.01	8.51	12.02	15.77	20.28	25.10
Max.	1.25	2.41	3.71	5.72	8.47	11.99	16.93	22.21	28.56	35.36

Room Breathing Zone

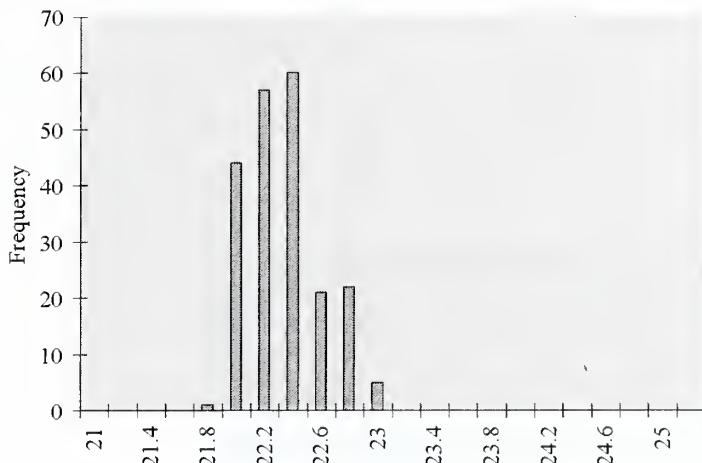
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.54	68.96	51	54.65%
S.D.	0.16	0.29	23	
Max.	21.58	70.84	140	

Room Breathing Zone NH3 (ppm)

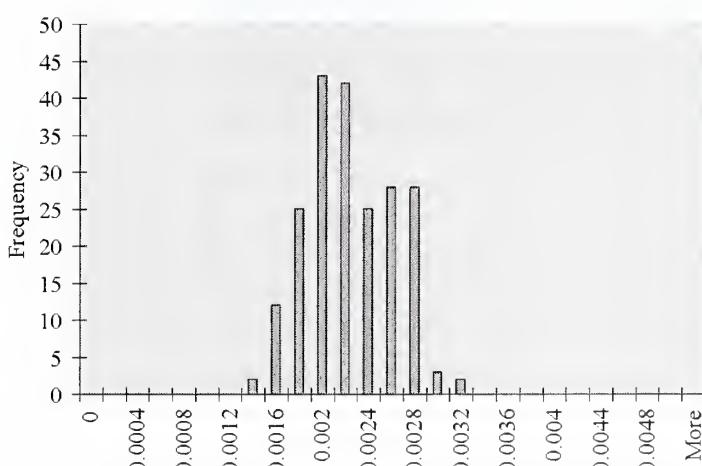
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.12	0.18	0.26	0.36	0.47	0.61	0.75
Max.	0.07	0.14	0.22	0.34	0.50	0.70	0.99	1.30	1.68	2.08

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



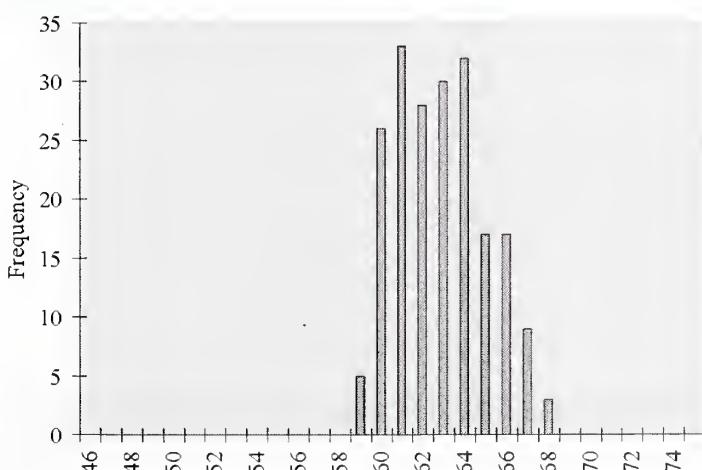
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg \rightarrow ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1885
5	785000	2791
6	785000	3954
7	785000	5584
8	785000	7325
9	785000	9419
10	785000	11384

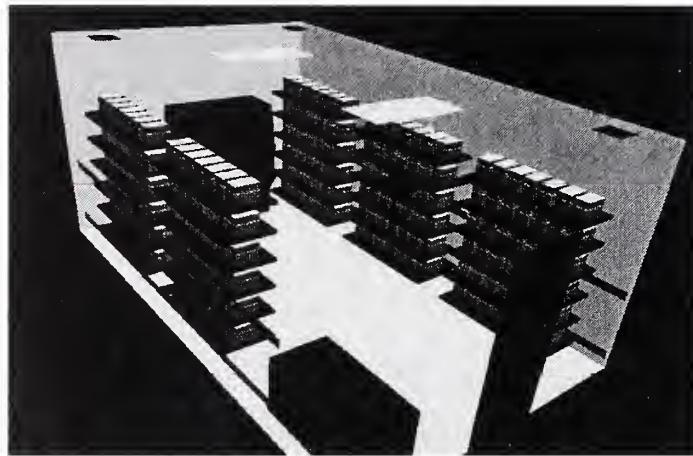
Cage occupied zone average relative humidity (%) distribution



Casename

Case 42**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling x4	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.19	71.93	1728	62.77%
S.D.	0.24	0.44	326	2.64%
Max.	22.86	73.15	2535	69.49%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.75	2.70	4.25	6.41	9.14	13.03	16.94	21.56	26.19
Max.	1.33	2.57	3.96	6.23	9.40	13.40	19.11	24.86	31.63	38.42

Room Breathing Zone

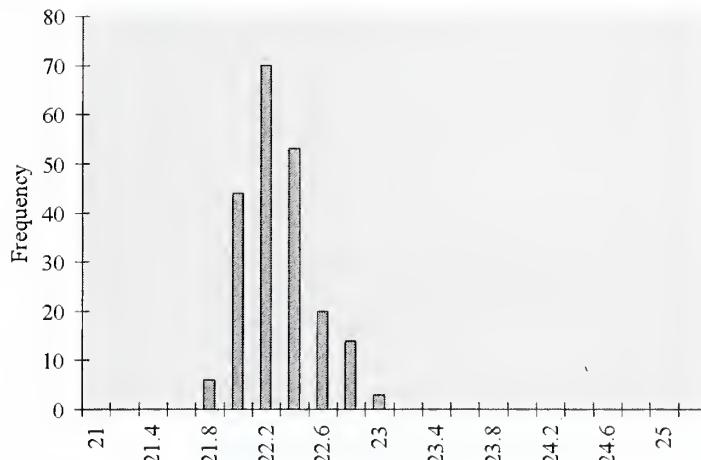
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.53	68.95	63	54.79%
S.D.	0.24	0.44	26	
Max.	21.53	70.75	189	

Room Breathing Zone NH₃ (ppm)

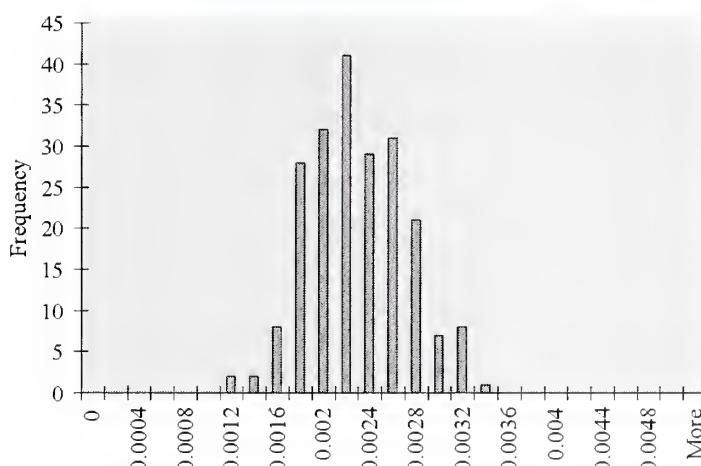
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.16	0.23	0.33	0.48	0.62	0.79	0.96
Max.	0.10	0.19	0.30	0.47	0.70	1.00	1.43	1.85	2.36	2.87

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

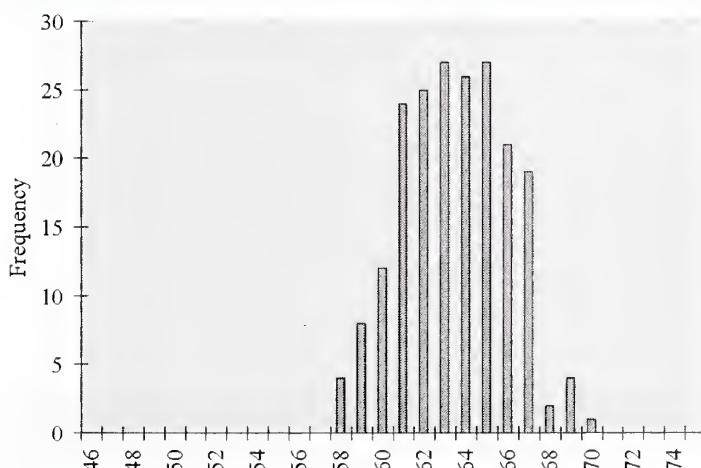


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1930
5	785000	2910
6	785000	4151
7	785000	5919
8	785000	7698
9	785000	9795
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



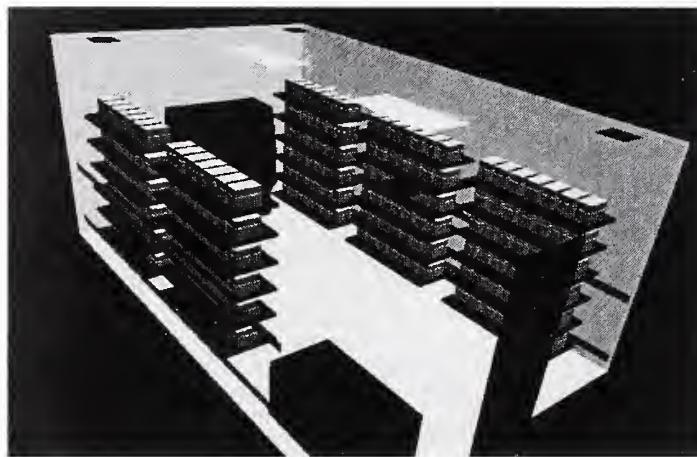
Casename

Case 43**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind (rot 90°)	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.00	71.59	1855	64.56%
S.D.	0.23	0.41	271	2.03%
Max.	22.56	72.61	2429	69.24%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.98	1.88	2.90	4.96	7.90	11.50	16.87	21.40	26.38	30.19
Max.	1.28	2.46	3.79	6.49	10.34	15.06	22.09	28.02	34.54	39.52

Room Breathing Zone

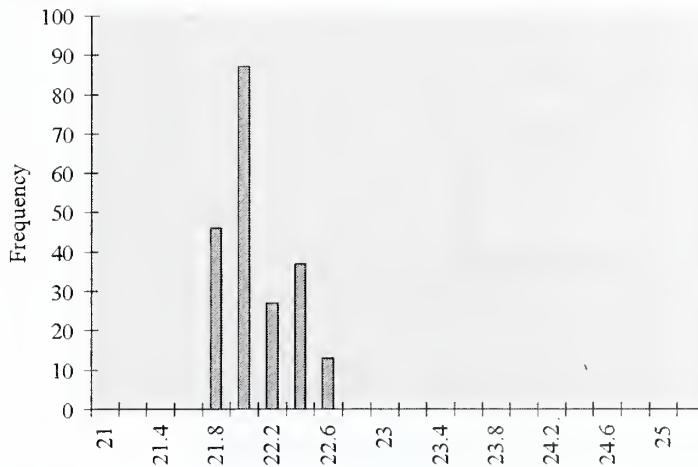
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.24	68.44	65	55.81%
S.D.	0.22	0.39	23	
Max.	21.94	71.49	164	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.07	0.10	0.17	0.28	0.40	0.59	0.75	0.93	1.06
Max.	0.09	0.17	0.26	0.44	0.70	1.01	1.49	1.89	2.33	2.66

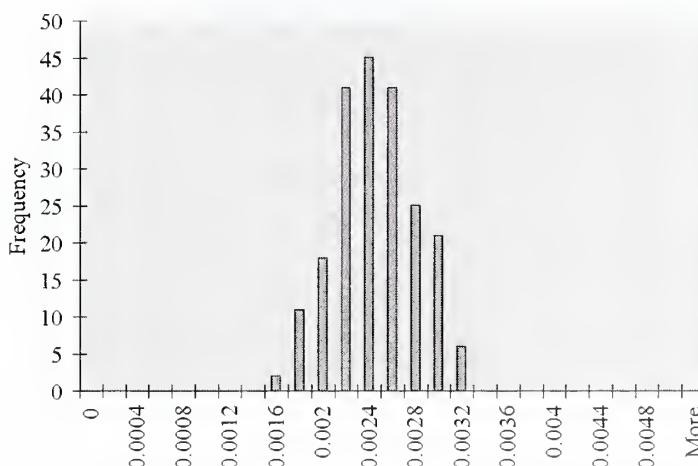
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



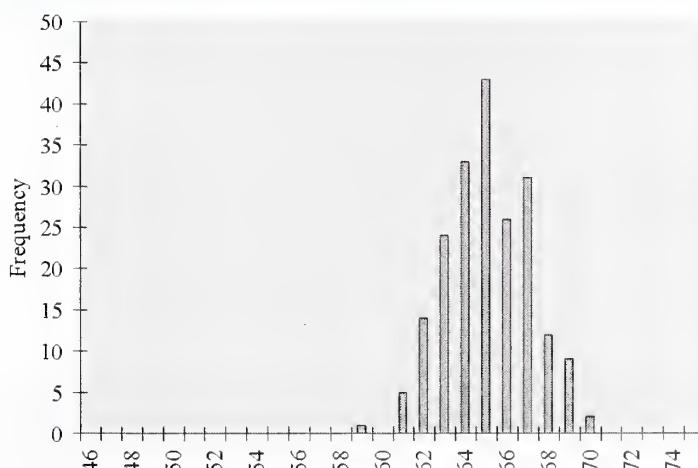
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2097
5	785000	3342
6	785000	4867
7	785000	7139
8	785000	9054
9	785000	11163
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



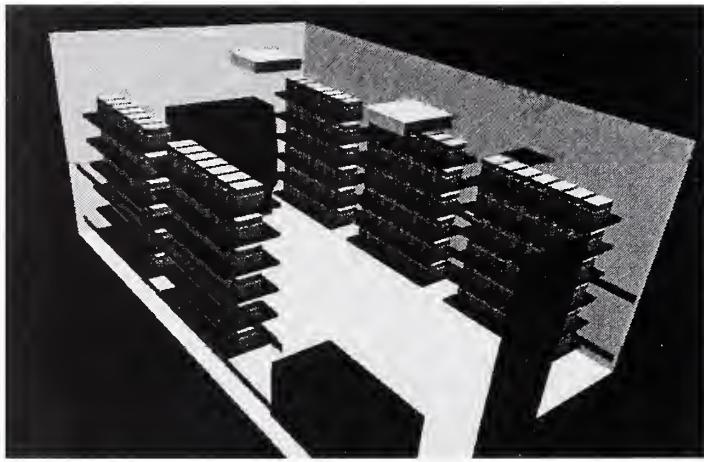
Casename

Case 44**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial (rot 90°)	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
On wall	Single	1050	21000 gr		

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.16	71.89	2118	66.03%
S.D.	0.29	0.52	286	2.26%
Max.	22.97	73.35	2732	71.46%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.13	2.14	3.31	6.03	9.97	14.71	21.96	27.43	33.15	36.40
Max.	1.45	2.77	4.26	7.77	12.86	18.98	28.33	35.38	42.75	46.95

Room Breathing Zone

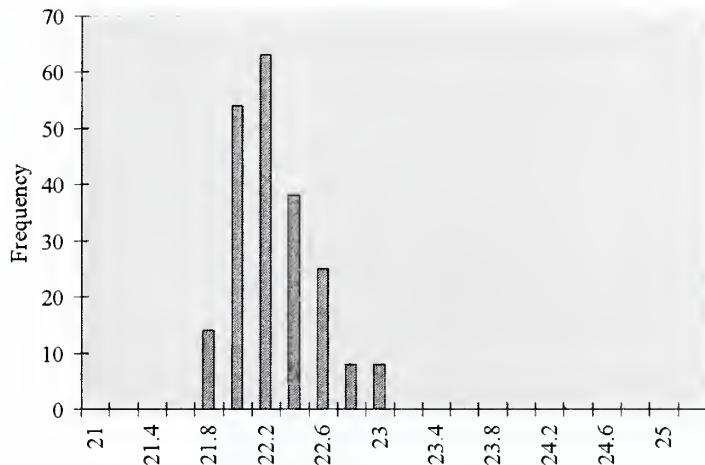
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.45	68.80	74	55.17%
S.D.	0.21	0.38	35	
Max.	21.87	71.36	237	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.21	0.35	0.51	0.76	0.95	1.15	1.27
Max.	0.13	0.24	0.37	0.67	1.11	1.65	2.46	3.07	3.71	4.07

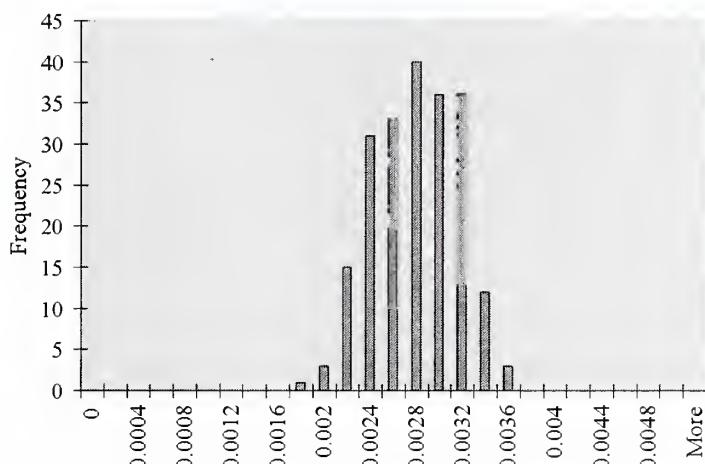
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



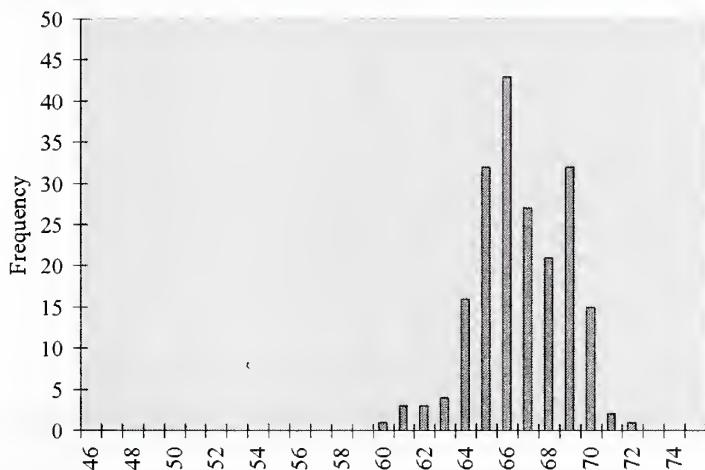
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	417
2	785000	795
3	785000	1225
4	785000	2233
5	785000	3696
6	785000	5454
7	785000	8140
8	785000	10167
9	785000	12285
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



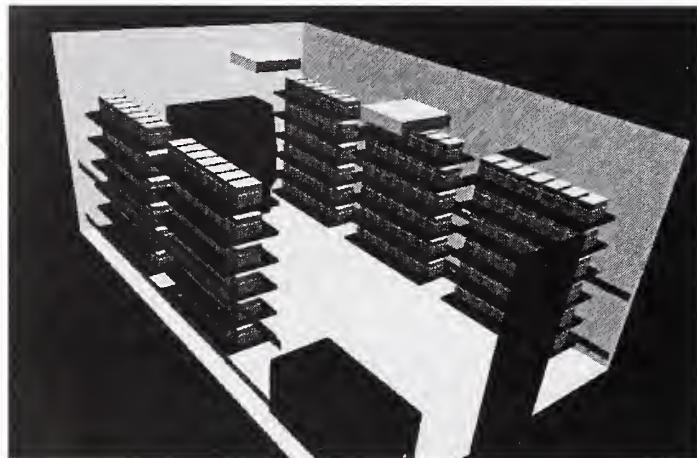
Casename

Case 45**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 50cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.06	71.72	1929	64.88%
S.D.	0.27	0.48	325	2.55%
Max.	22.92	73.26	2681	69.79%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.02	1.95	3.01	5.22	8.40	12.27	18.08	22.84	28.03	31.77
Max.	1.42	2.71	4.18	7.26	11.68	17.06	25.13	31.76	38.96	44.16

Room Breathing Zone

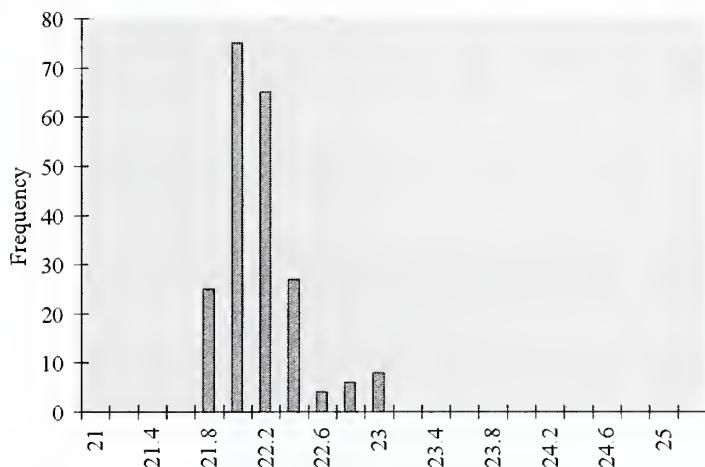
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.27	68.48	52	55.61%
S.D.	0.20	0.37	23	
Max.	21.74	71.14	246	

Room Breathing Zone NH₃ (ppm)

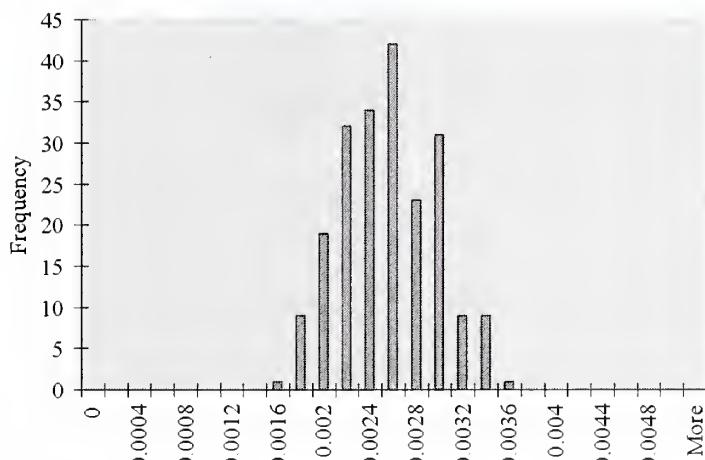
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.14	0.23	0.33	0.49	0.62	0.76	0.86
Max.	0.13	0.25	0.38	0.67	1.07	1.56	2.30	2.91	3.57	4.05

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



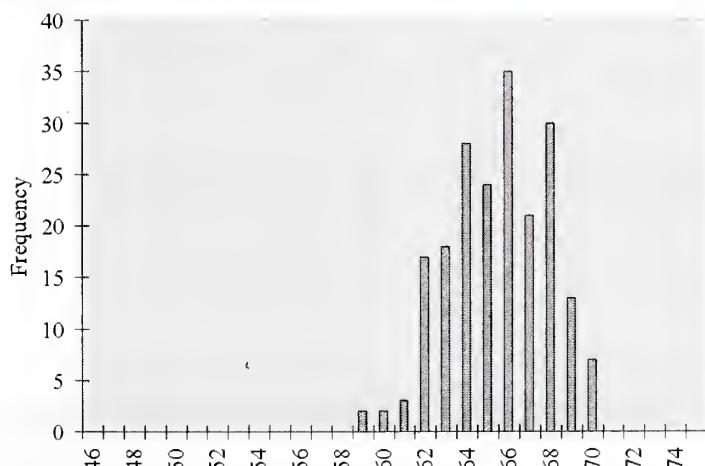
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2127
5	785000	3419
6	785000	4995
7	785000	7358
8	785000	9298
9	785000	11408
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

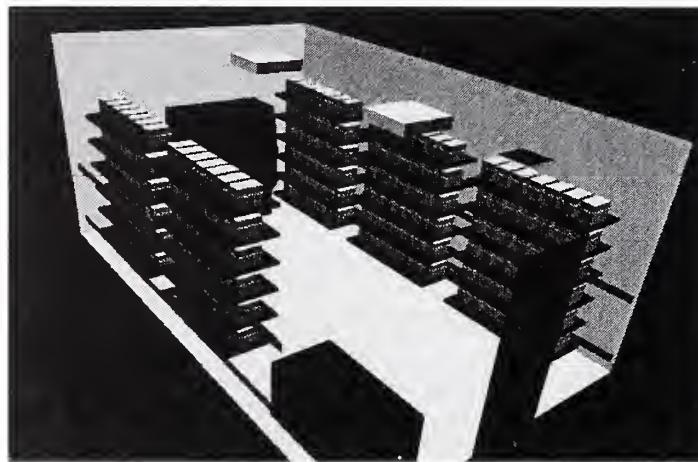


Casename

Case 46**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neutral

Room ACH 15

Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.00	71.61	1943	65.24%
S.D.	0.29	0.52	346	2.71%
Max.	22.91	73.24	2746	71.02%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.03	1.97	3.03	5.35	8.68	12.72	18.82	23.69	28.92	32.44
Max.	1.45	2.78	4.28	7.56	12.26	17.97	26.60	33.48	40.87	45.84

Room Breathing Zone

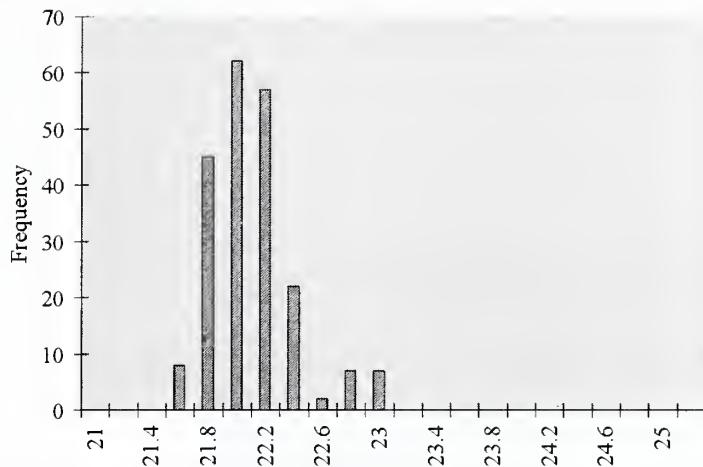
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.16	68.29	43	55.89%
S.D.	0.23	0.41	18	
Max.	20.82	69.48	200	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.07	0.12	0.19	0.28	0.42	0.53	0.64	0.72
Max.	0.11	0.20	0.31	0.55	0.89	1.31	1.94	2.44	2.98	3.34

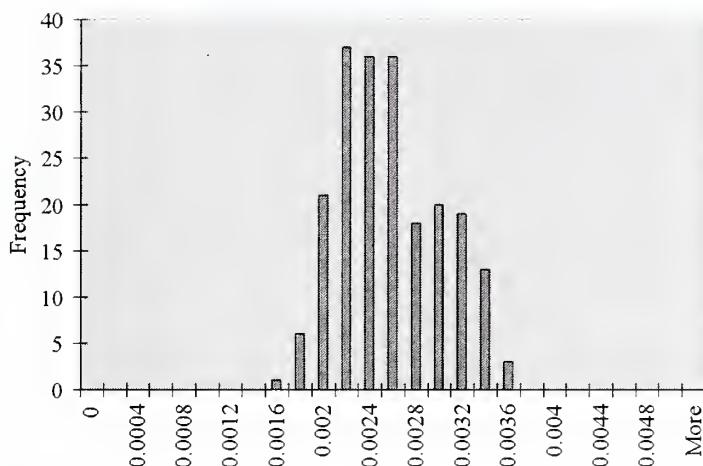
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



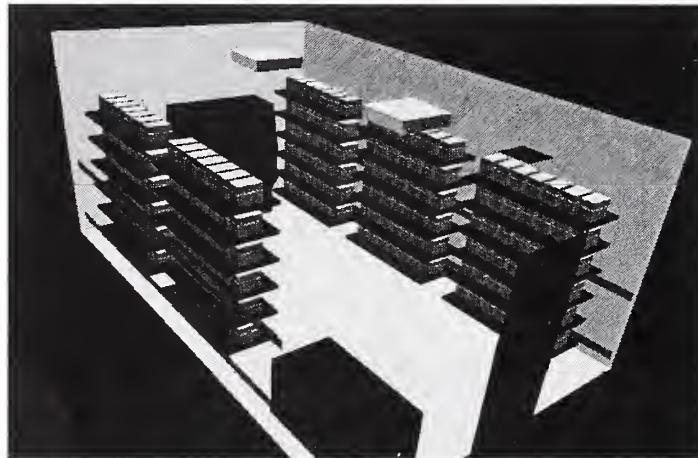
Casename

Case 47**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation pos 50cfm
ON	On wall	Single	1050	21000 gr	

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.08	71.74	1961	65.09%
S.D.	0.31	0.55	363	2.81%
Max.	23.03	73.46	2805	70.99%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.04	1.98	3.06	5.36	8.67	12.68	18.73	23.62	28.89	32.55
Max.	1.48	2.84	4.38	7.67	12.40	18.15	26.80	33.79	41.34	46.57

Room Breathing Zone

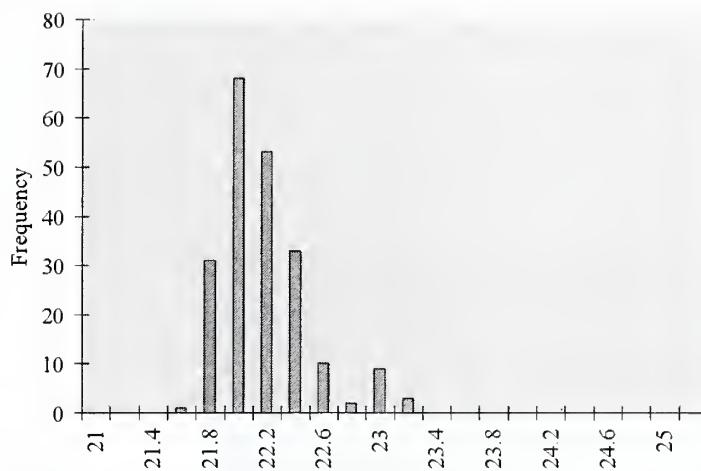
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.26	68.46	40	55.53%
S.D.	0.23	0.41	16	
Max.	20.93	69.68	176	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.11	0.18	0.26	0.38	0.48	0.58	0.66
Max.	0.09	0.18	0.27	0.48	0.78	1.14	1.68	2.12	2.59	2.92

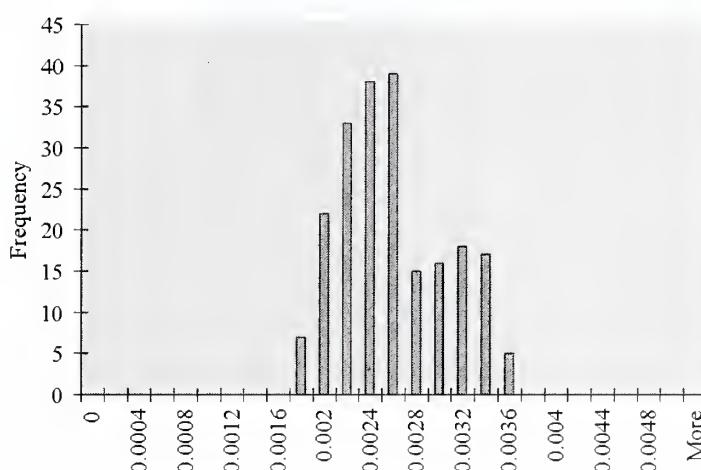
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



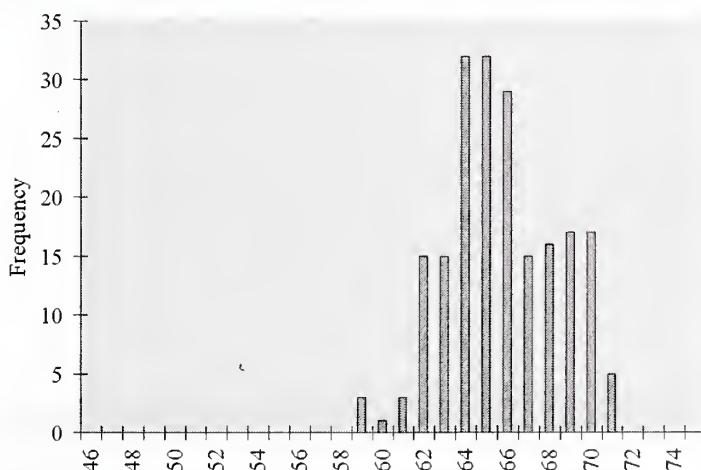
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2146
5	785000	3470
6	785000	5079
7	785000	7501
8	785000	9456
9	785000	11568
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



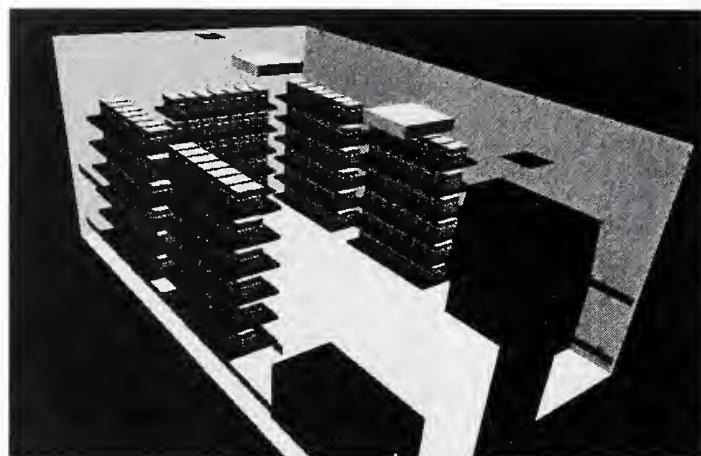
Casename

Case 48**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON (swapped with raOn wall)		Single	1050	21000 gr	neg 100cfm

Room
ACH
15

Cage
Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.11	71.80	2099	66.07%
S.D.	0.21	0.38	368	2.74%
Max.	22.62	72.72	2715	70.68%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.12	2.12	3.28	5.98	9.91	14.62	21.83	27.26	32.92	36.12
Max.	1.44	2.75	4.24	7.73	12.81	18.91	28.23	35.25	42.58	46.71

Room Breathing Zone

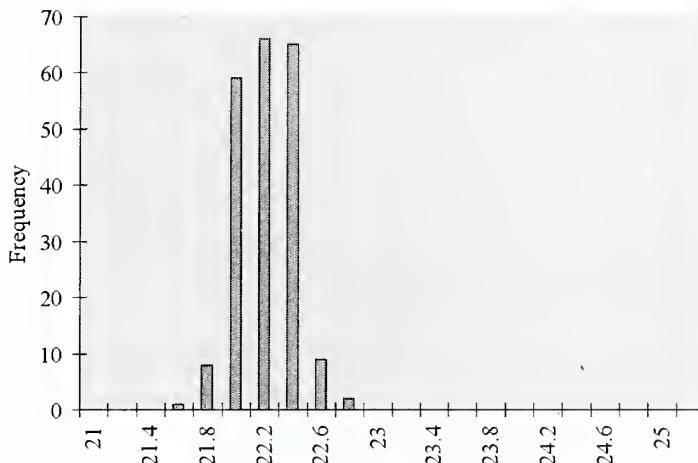
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.61	69.09	65	54.53%
S.D.	0.52	0.93	44	
Max.	25.89	78.59	302	

Room Breathing Zone NH₃ (ppm)

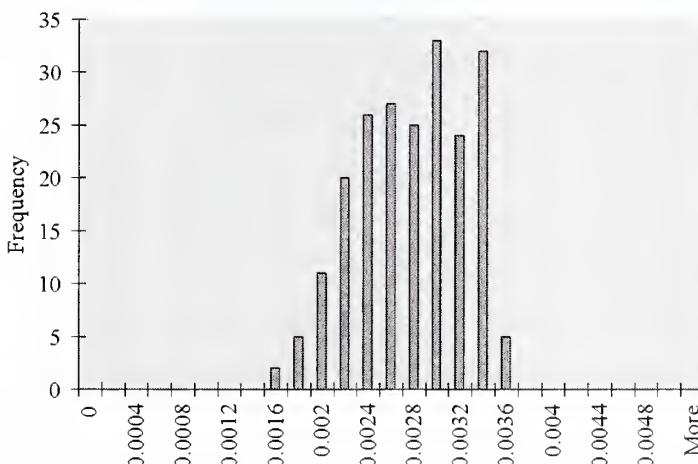
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.07	0.10	0.18	0.30	0.45	0.67	0.84	1.01	1.11
Max.	0.16	0.31	0.47	0.86	1.42	2.10	3.14	3.92	4.73	5.19

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

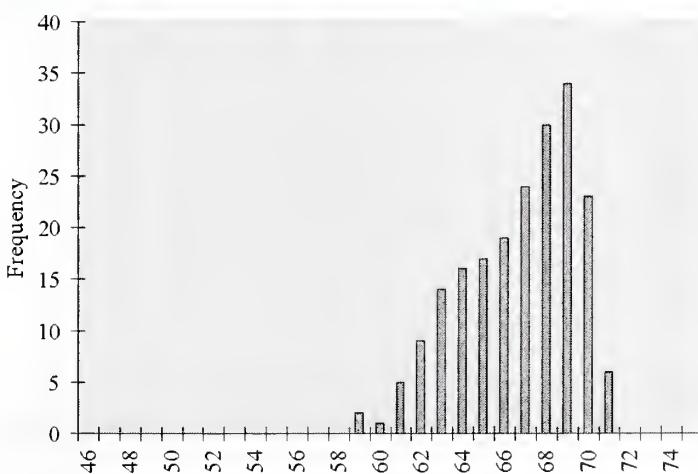


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	417
2	785000	795
3	785000	1225
4	785000	2237
5	785000	3704
6	785000	5468
7	785000	8165
8	785000	10195
9	785000	12313
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



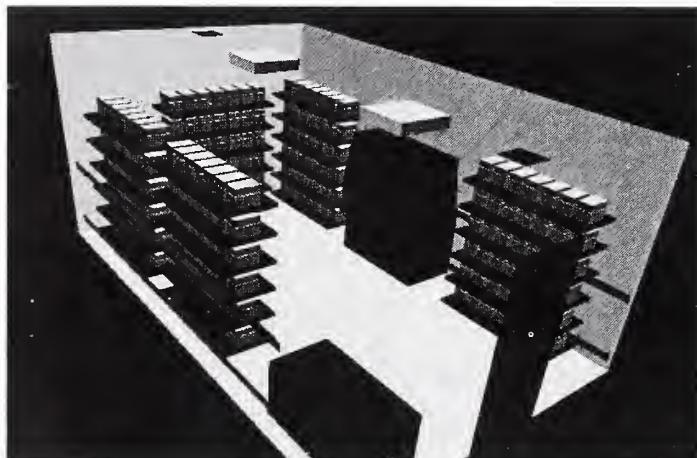
Casename

Case 49**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON (swapped with radOn wall)	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.18	71.92	2025	65.20%
S.D.	0.22	0.39	351	2.99%
Max.	23.20	73.77	2683	69.92%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.07	2.05	3.16	5.56	9.02	13.21	19.54	24.61	30.06	33.76
Max.	1.42	2.72	4.19	7.37	11.95	17.51	25.89	32.60	39.82	44.72

Room Breathing Zone

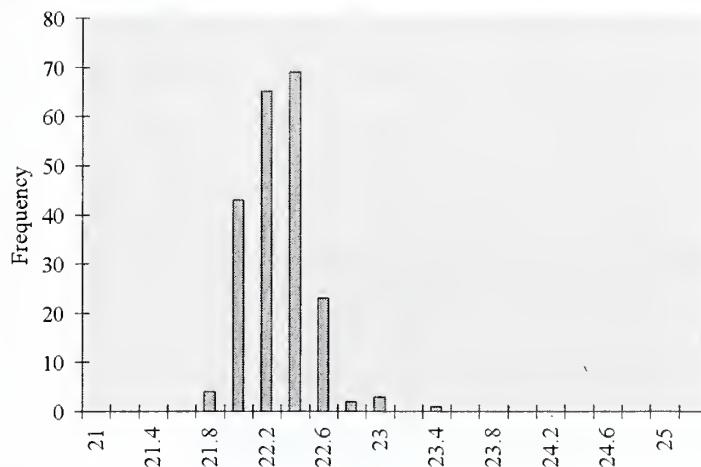
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.55	68.98	52	54.62%
S.D.	0.56	1.02	39	
Max.	26.07	78.93	246	

Room Breathing Zone NH₃ (ppm)

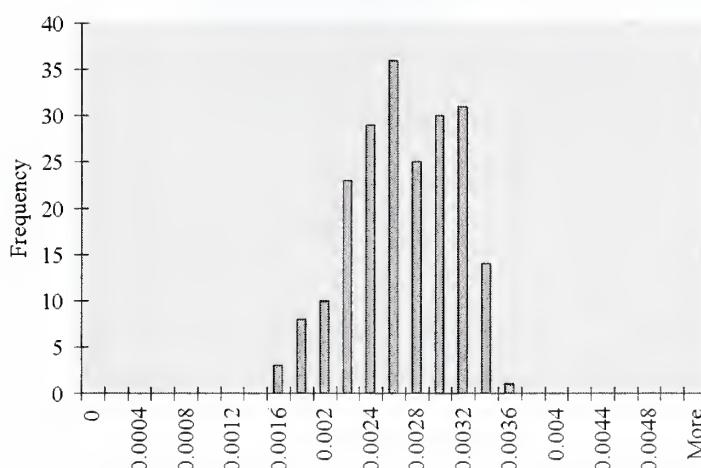
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.14	0.23	0.34	0.50	0.63	0.77	0.86
Max.	0.13	0.25	0.38	0.68	1.10	1.61	2.38	3.00	3.66	4.11

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



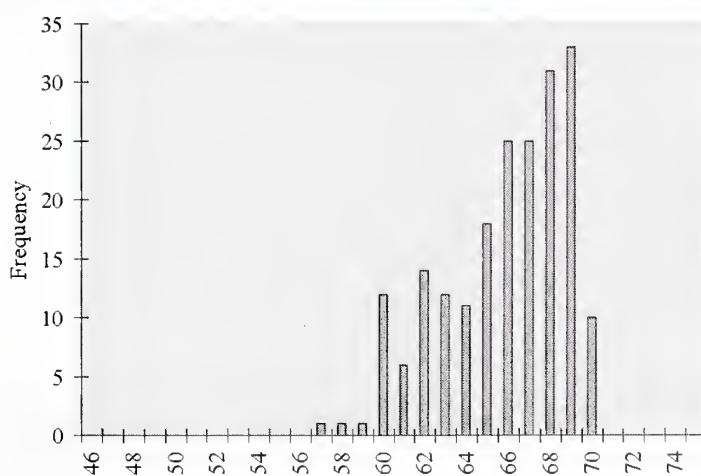
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	416
2	785000	795
3	785000	1225
4	785000	2156
5	785000	3496
6	785000	5123
7	785000	7576
8	785000	9540
9	785000	11652
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

Case 50**Description**

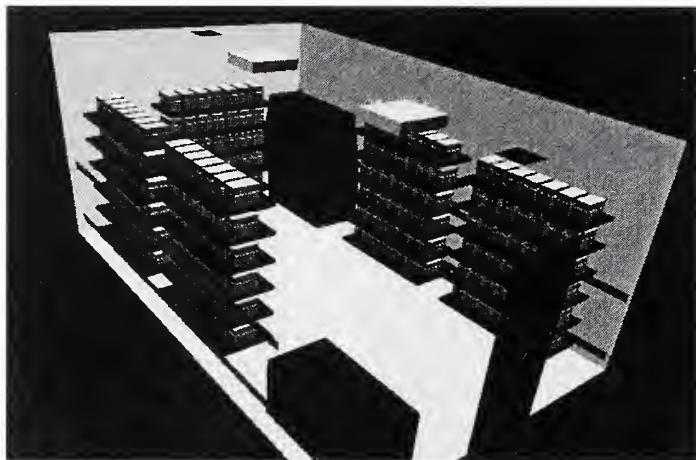
Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON (swapped with raOn wall		Single	1050	21000 gr	neg 100cfm

Room

ACH

15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.17	71.91	1840	63.72%
S.D.	0.17	0.31	402	3.09%
Max.	22.58	72.64	2594	69.58%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.97	1.86	2.87	4.73	7.36	10.62	15.40	19.74	24.67	28.99
Max.	1.36	2.63	4.05	6.67	10.37	14.97	21.70	27.81	34.76	40.85

Room Breathing Zone

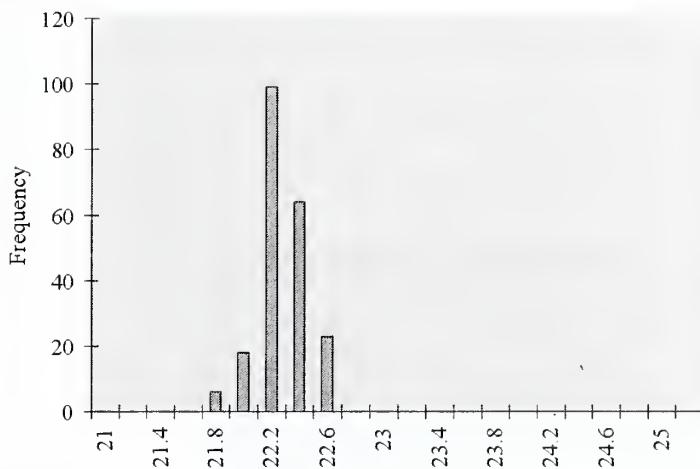
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.46	68.83	55	54.94%
S.D.	0.29	0.52	26	
Max.	25.99	78.78	198	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.14	0.22	0.32	0.46	0.59	0.74	0.86
Max.	0.10	0.20	0.31	0.51	0.79	1.14	1.65	2.12	2.65	3.11

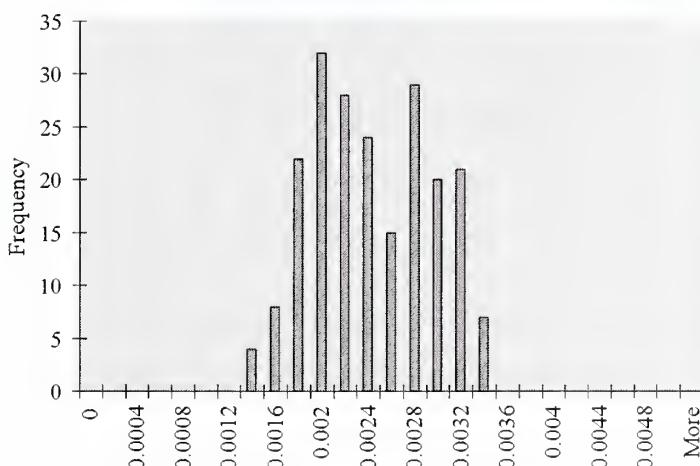
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



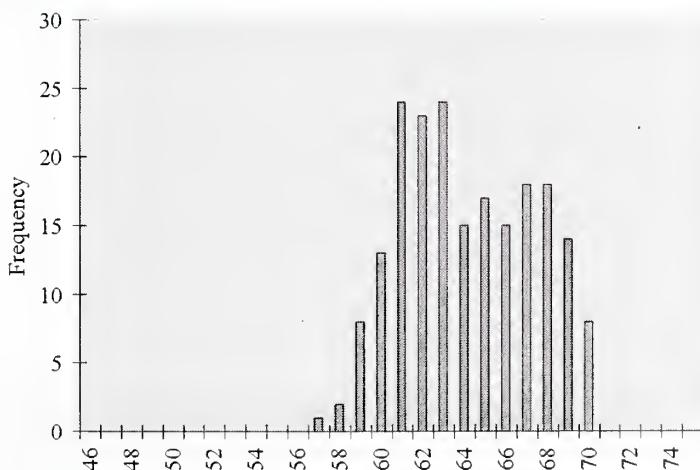
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	413
2	785000	795
3	785000	1225
4	785000	2019
5	785000	3139
6	785000	4531
7	785000	6567
8	785000	8418
9	785000	10521
10	785000	11384

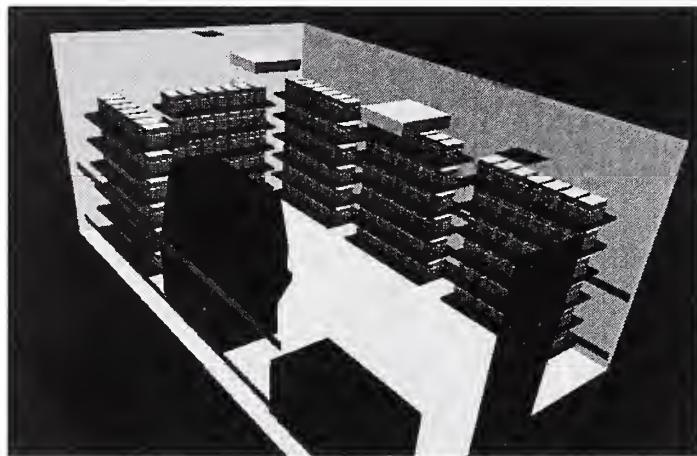
Cage occupied zone average relative humidity (%) distribution



Casename

Case 51**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON (swapped with raOn wall)	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room
ACH
15Cage
Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.19	71.95	2045	65.30%
S.D.	0.23	0.41	341	2.93%
Max.	23.17	73.71	2710	70.21%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.08	2.07	3.19	5.64	9.17	13.45	19.91	25.05	30.56	34.22
Max.	1.44	2.74	4.23	7.48	12.15	17.82	26.39	33.19	40.49	45.34

Room Breathing Zone

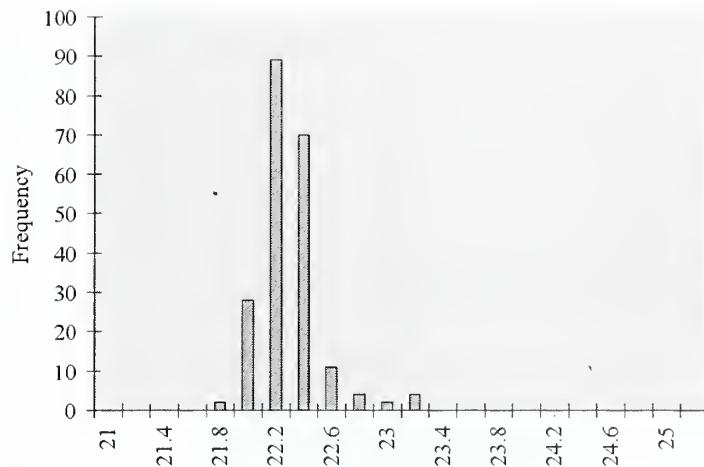
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.54	68.96	67	54.79%
S.D.	0.41	0.74	37	
Max.	25.57	78.03	229	

Room Breathing Zone NH₃ (ppm)

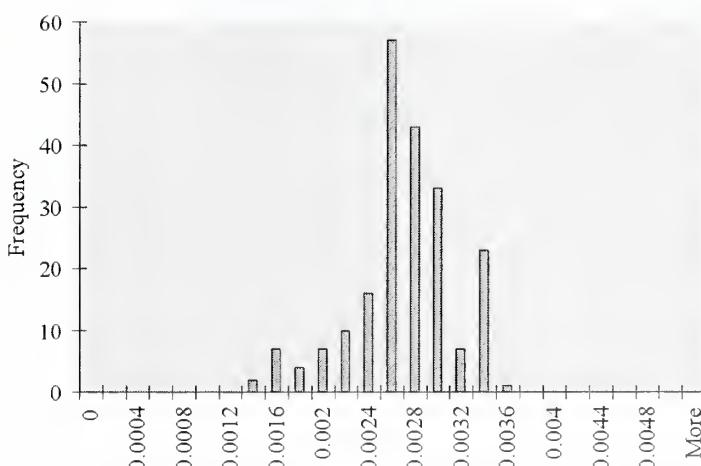
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.10	0.18	0.30	0.44	0.65	0.82	1.00	1.12
Max.	0.12	0.23	0.36	0.63	1.03	1.51	2.23	2.81	3.42	3.83

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



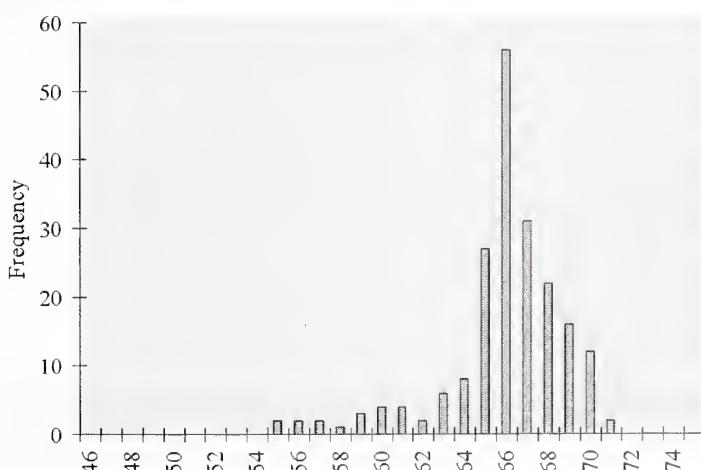
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	416
2	785000	795
3	785000	1225
4	785000	2166
5	785000	3521
6	785000	5163
7	785000	7645
8	785000	9617
9	785000	11730
10	785000	11384

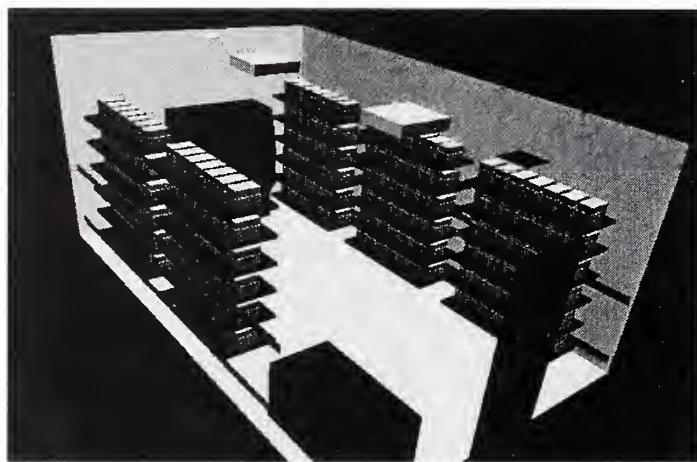
Cage occupied zone average relative humidity (%) distribution



Casename

Case 52**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	ON (swapped with radOn wall)	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.47	72.45	1665	64.79%
S.D.	0.34	0.62	446	3.28%
Max.	23.41	74.13	2623	71.21%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.88	1.69	2.60	4.49	7.20	10.51	15.47	19.57	24.04	27.33
Max.	1.39	2.66	4.09	7.08	11.35	16.56	24.37	30.83	37.88	43.05

Room Breathing Zone

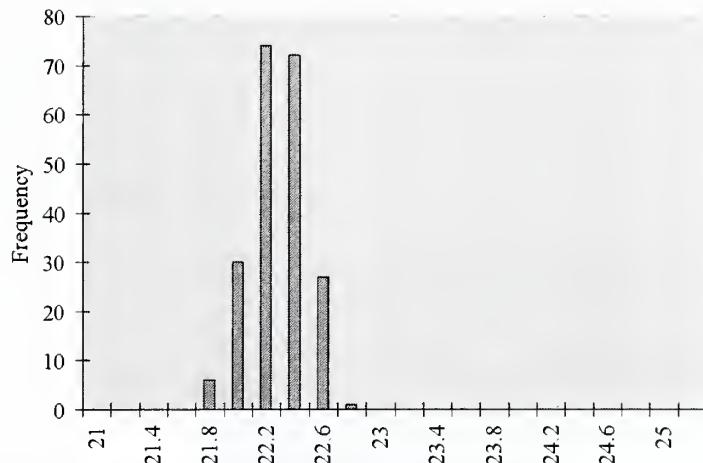
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.46	68.83	65	55.03%
S.D.	0.23	0.41	46	
Max.	25.02	77.03	363	

Room Breathing Zone NH₃ (ppm)

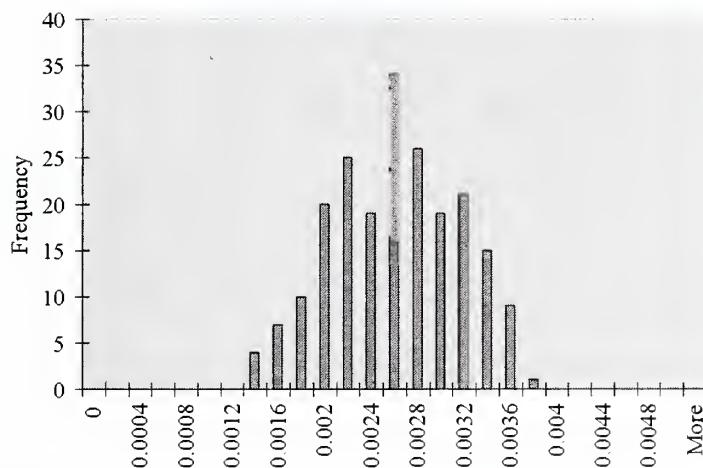
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.07	0.10	0.18	0.28	0.41	0.60	0.76	0.94	1.07
Max.	0.19	0.37	0.57	0.98	1.57	2.29	3.37	4.26	5.24	5.95

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

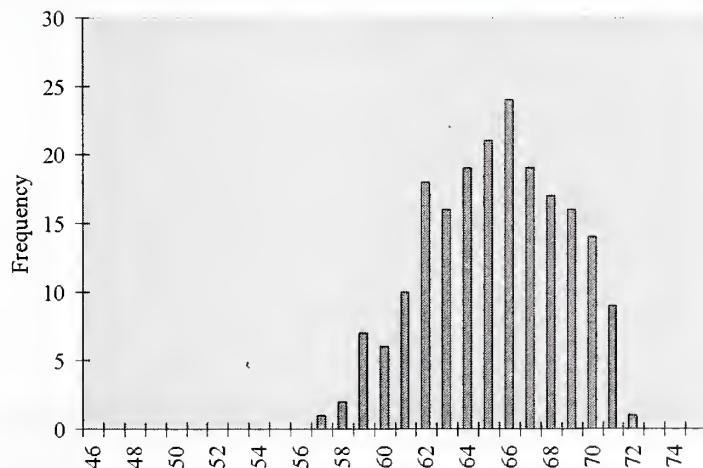


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2118
5	785000	3396
6	785000	4956
7	785000	7292
8	785000	9224
9	785000	11334
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



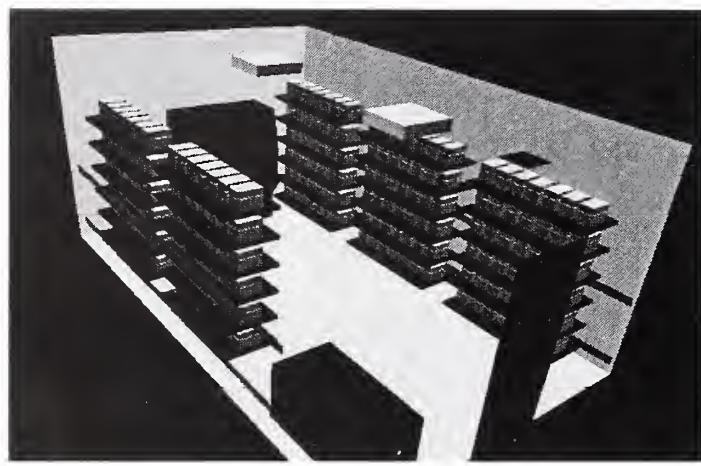
Casename

Case 53**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.69	71.03	2212	68.80%
S.D.	0.15	0.26	353	2.63%
Max.	21.98	71.56	2826	73.06%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.19	2.24	3.45	7.02	12.29	18.48	28.24	34.54	40.56	41.81
Max.	1.52	2.86	4.41	8.96	15.70	23.61	36.08	44.13	51.82	53.41

Room Breathing Zone

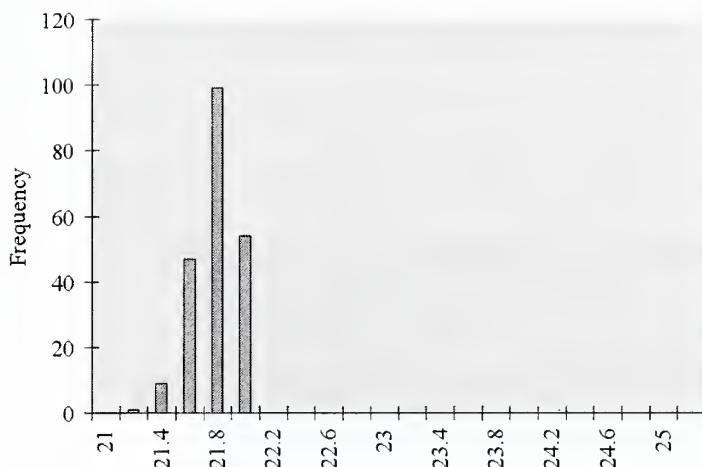
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.77	67.59	58	57.45%
S.D.	0.16	0.28	24	
Max.	21.55	70.80	168	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.18	0.32	0.49	0.74	0.91	1.07	1.10
Max.	0.09	0.17	0.26	0.53	0.93	1.40	2.14	2.62	3.08	3.18

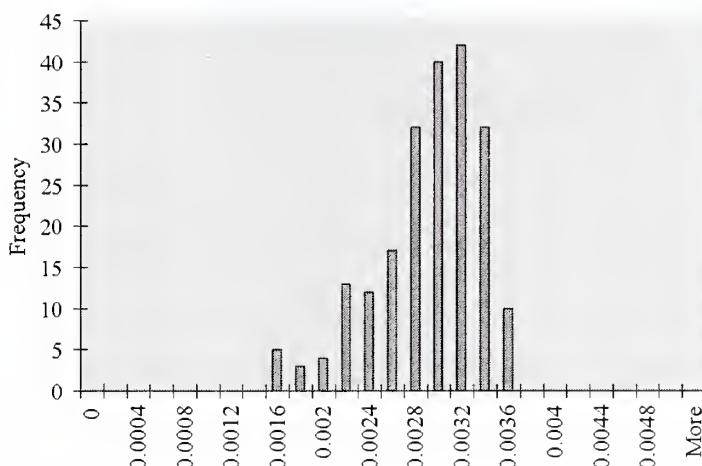
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



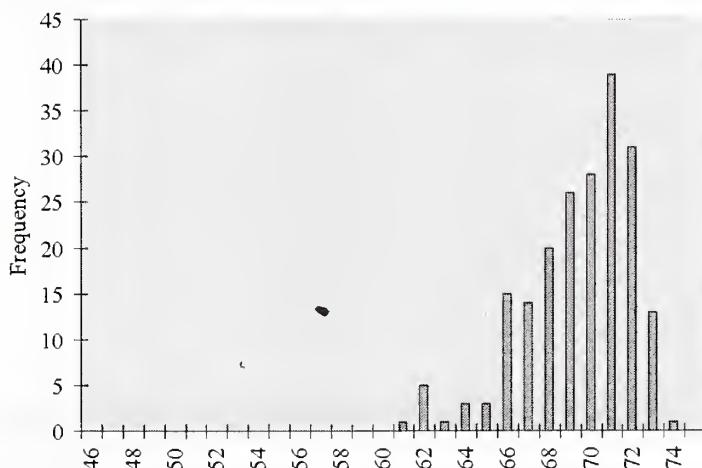
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	422
2	785000	795
3	785000	1225
4	785000	2490
5	785000	4362
6	785000	6558
7	785000	10023
8	785000	12260
9	785000	14396
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



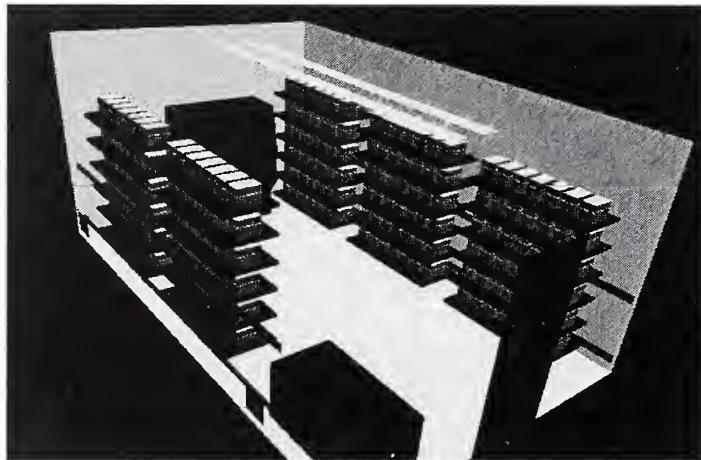
Casename

Case 54**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON alt design	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room
ACH
15

Cage
Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.67	71.00	1869	66.03%
S.D.	0.15	0.27	301	2.26%
Max.	22.00	71.60	2677	72.37%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.99	1.89	2.92	5.32	8.80	12.98	19.37	24.20	29.24	32.12
Max.	1.42	2.71	4.18	7.61	12.60	18.59	27.75	34.66	41.88	46.00

Room Breathing Zone

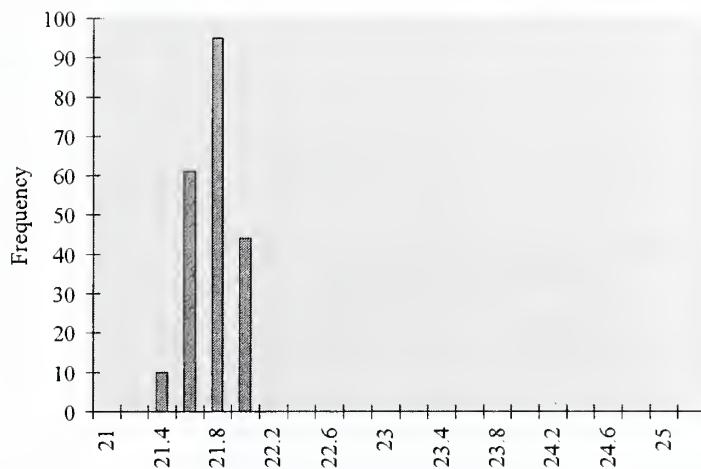
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.79	67.61	60	57.41%
S.D.	0.16	0.29	33	
Max.	20.81	69.47	283	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.17	0.28	0.42	0.62	0.78	0.94	1.03
Max.	0.15	0.29	0.44	0.81	1.33	1.97	2.94	3.67	4.43	4.87

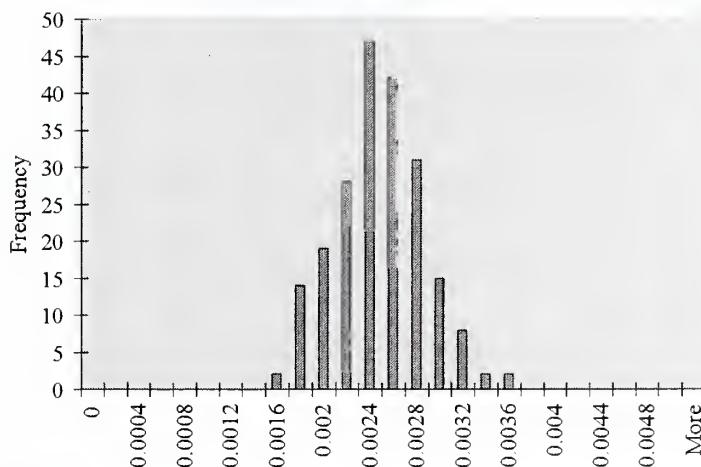
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



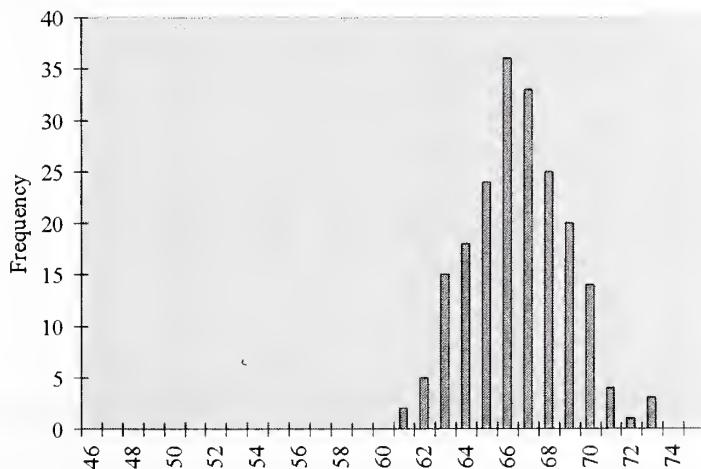
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	417
2	785000	795
3	785000	1225
4	785000	2233
5	785000	3694
6	785000	5451
7	785000	8136
8	785000	10163
9	785000	12281
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



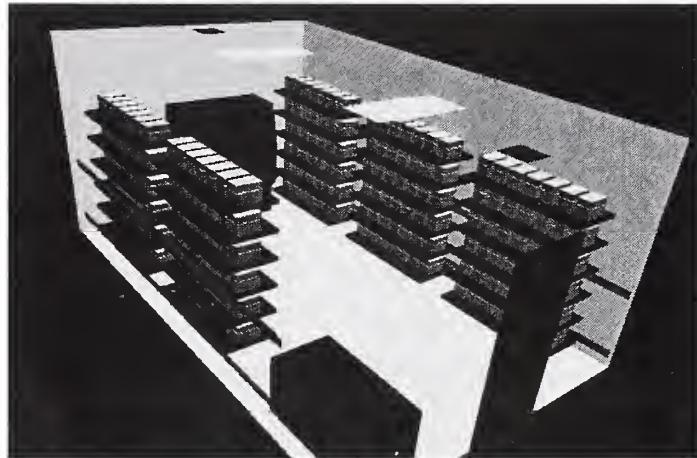
Casename

Case 55**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room
ACH
15

Cage
Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.59	70.86	2039	67.77%
S.D.	0.15	0.27	307	2.34%
Max.	21.94	71.50	2624	71.91%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.09	2.06	3.18	6.22	10.69	15.97	24.22	29.83	35.36	37.24
Max.	1.40	2.66	4.09	8.00	13.75	20.55	31.16	38.38	45.49	47.92

Room Breathing Zone

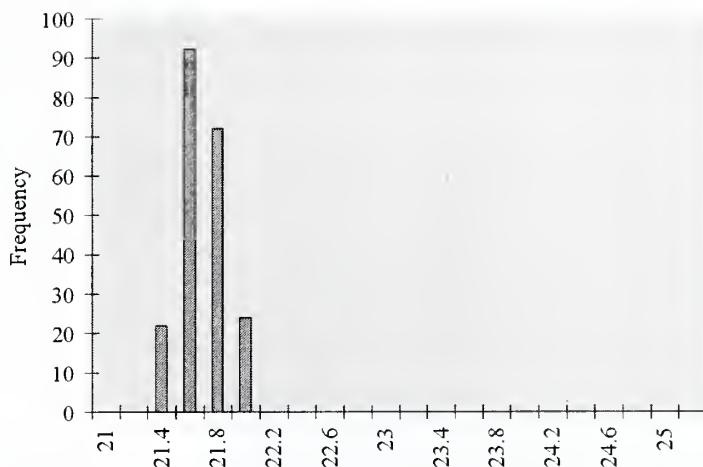
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.78	67.61	57	57.40%
S.D.	0.18	0.33	23	
Max.	20.84	69.52	241	

Room Breathing Zone NH₃ (ppm)

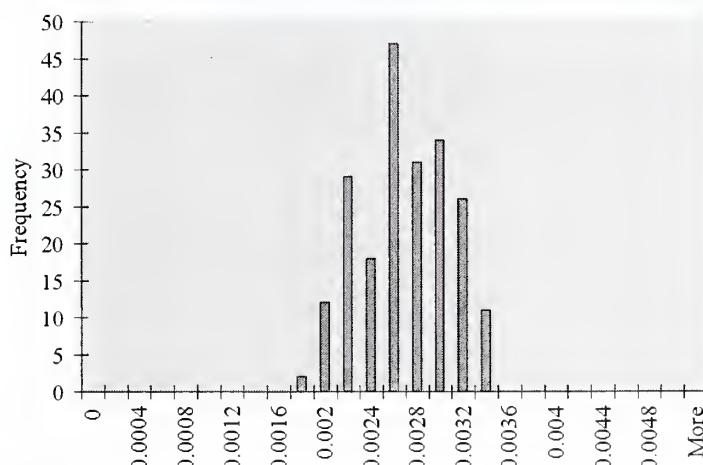
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.17	0.30	0.45	0.68	0.84	0.99	1.04
Max.	0.13	0.24	0.38	0.74	1.26	1.89	2.86	3.53	4.18	4.40

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



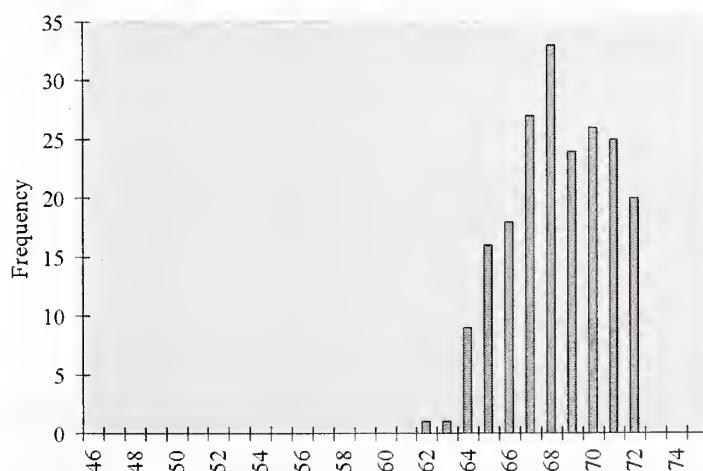
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	420
2	785000	795
3	785000	1225
4	785000	2395
5	785000	4115
6	785000	6148
7	785000	9324
8	785000	11483
9	785000	13612
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



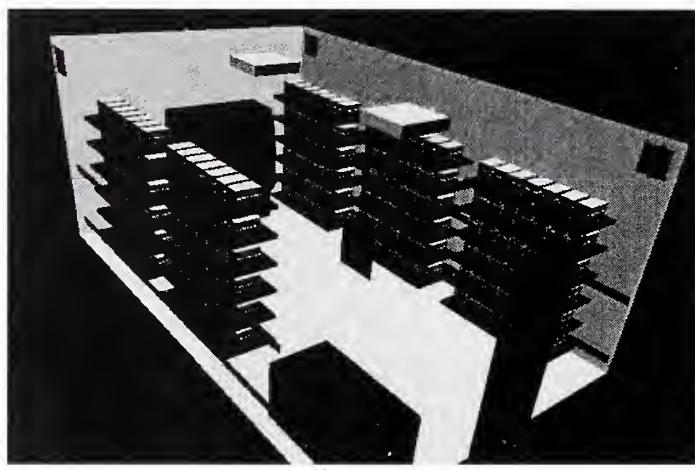
Casename

Case 56**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	High	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.09	71.76	1886	64.43%
S.D.	0.16	0.29	326	2.57%
Max.	22.43	72.37	2570	69.71%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.00	1.91	2.94	5.01	7.95	11.56	16.93	21.50	26.57	30.53
Max.	1.36	2.60	4.01	6.82	10.84	15.76	23.07	29.31	36.21	41.61

Room Breathing Zone

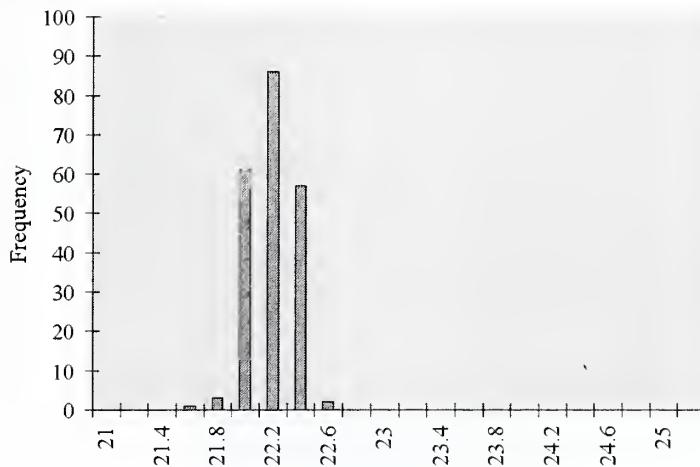
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.34	68.61	69	55.51%
S.D.	0.18	0.33	25	
Max.	21.07	69.93	157	

Room Breathing Zone NH₃ (ppm)

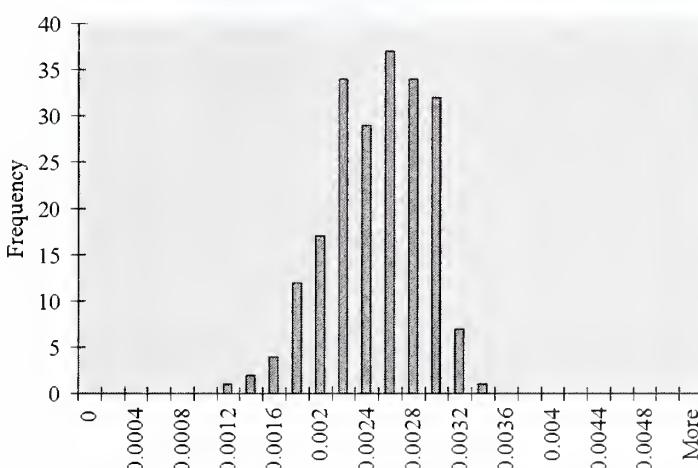
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.18	0.29	0.42	0.62	0.79	0.98	1.12
Max.	0.08	0.16	0.25	0.42	0.66	0.96	1.41	1.79	2.21	2.54

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



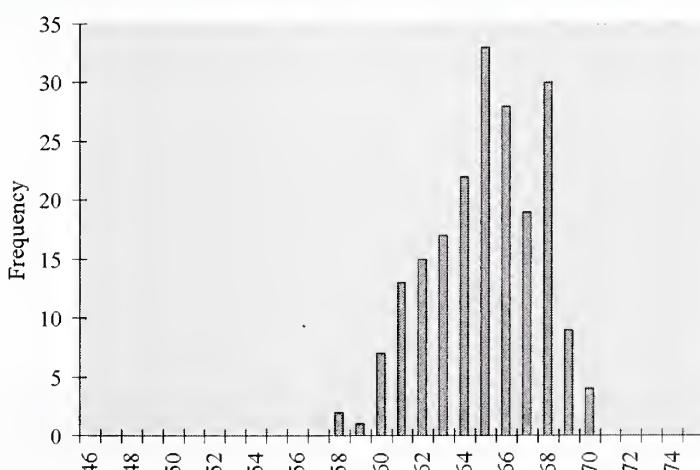
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2084
5	785000	3309
6	785000	4812
7	785000	7047
8	785000	8952
9	785000	11059
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



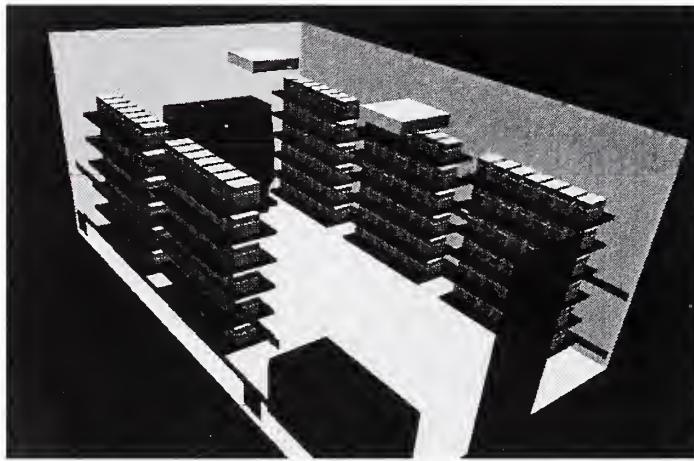
Casename

Case 57**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Low	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.00	73.40	1855	60.60%
S.D.	0.23	0.42	401	2.74%
Max.	23.50	74.31	2741	66.66%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.96	1.88	2.89	4.17	5.87	8.14	11.13	15.02	19.95	26.08
Max.	1.43	2.77	4.28	6.17	8.67	12.02	16.46	22.20	29.48	38.54

Room Breathing Zone

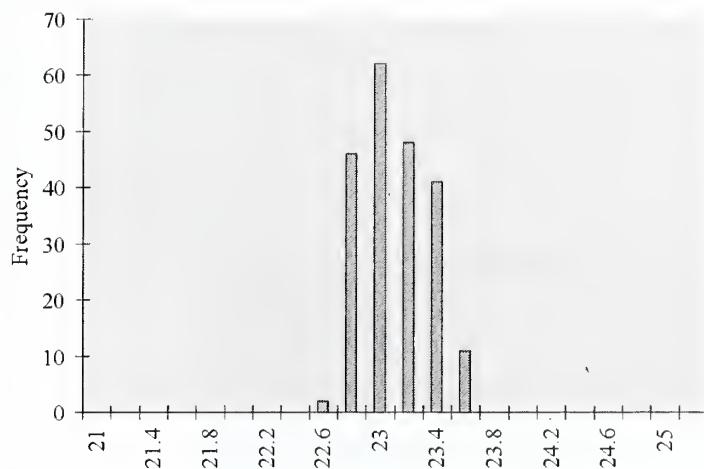
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.73	71.12	57	50.72%
S.D.	0.28	0.50	32	
Max.	22.54	72.56	279	

Room Breathing Zone NH3 (ppm)

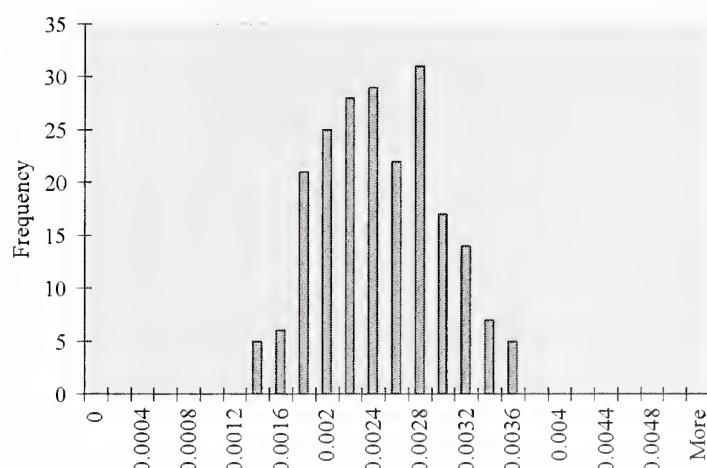
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.13	0.18	0.25	0.34	0.46	0.62	0.81
Max.	0.15	0.28	0.44	0.63	0.88	1.22	1.68	2.26	3.00	3.92

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



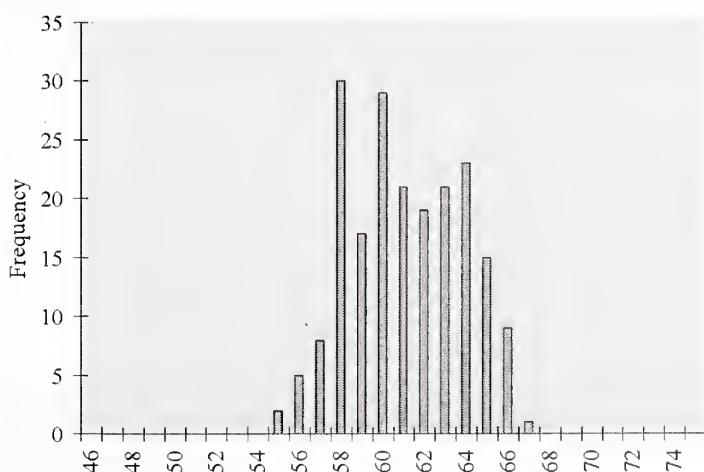
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors (kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

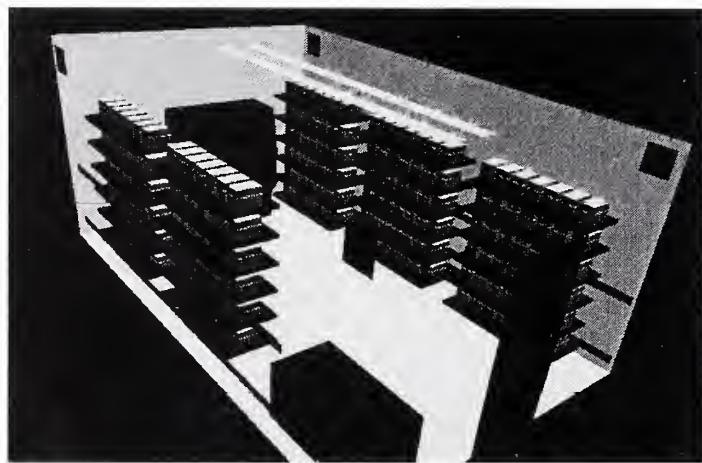
Cage occupied zone average relative humidity (%) distribution



Casename

Case 58**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	High	22	50%
Change Station ON alt design	Rack Orientation On wall	Rack Density Single	Number of Mice in Room 1050	Total mass of Mice in Room 21000 gr	Room Pressurisation neg 100cfm

Room
ACH
15Cage
Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.05	73.50	1990	61.43%
S.D.	0.25	0.45	426	2.90%
Max.	23.60	74.49	2869	67.54%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.04	2.01	3.10	4.58	6.56	9.16	12.68	16.93	22.23	28.50
Max.	1.50	2.90	4.48	6.60	9.45	13.21	18.29	24.42	32.05	41.10

Room Breathing Zone

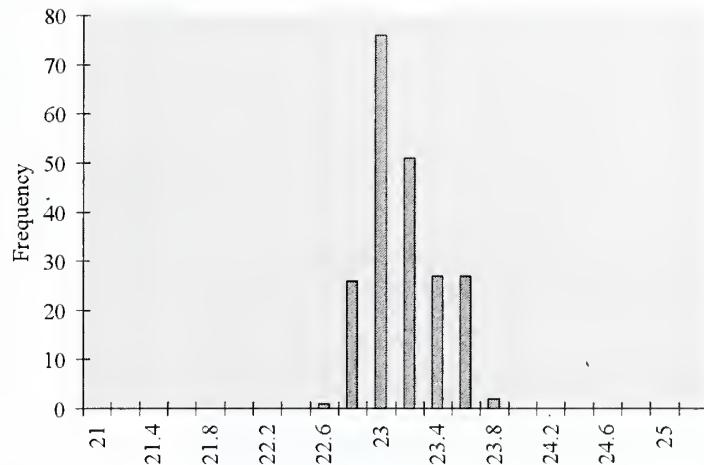
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.78	71.20	68	50.65%
S.D.	0.28	0.50	28	
Max.	22.52	72.54	254	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.16	0.22	0.31	0.43	0.58	0.76	0.97
Max.	0.13	0.26	0.40	0.58	0.84	1.17	1.62	2.16	2.83	3.63

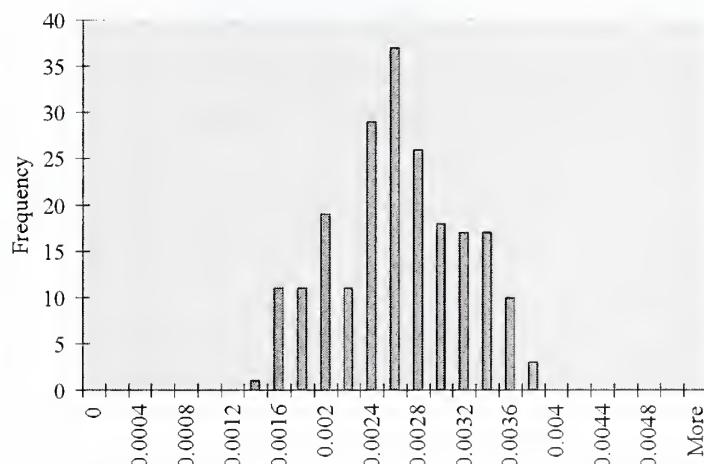
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



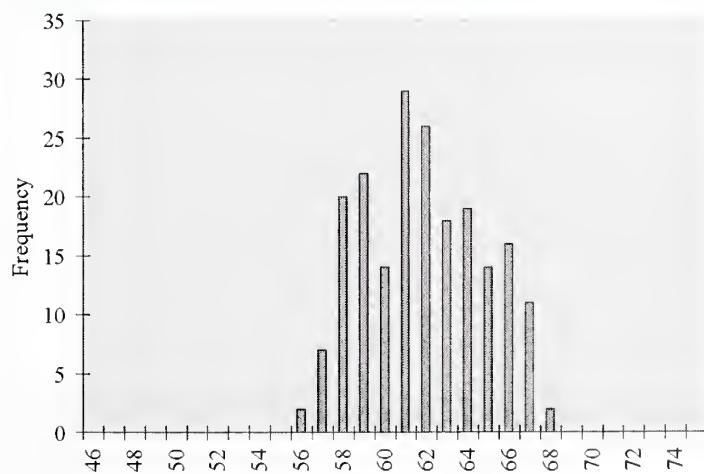
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	409
2	785000	795
3	785000	1225
4	785000	1806
5	785000	2586
6	785000	3614
7	785000	5004
8	785000	6681
9	785000	8770
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

Case 59**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Low	22	50%
Change Station ON alt design	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

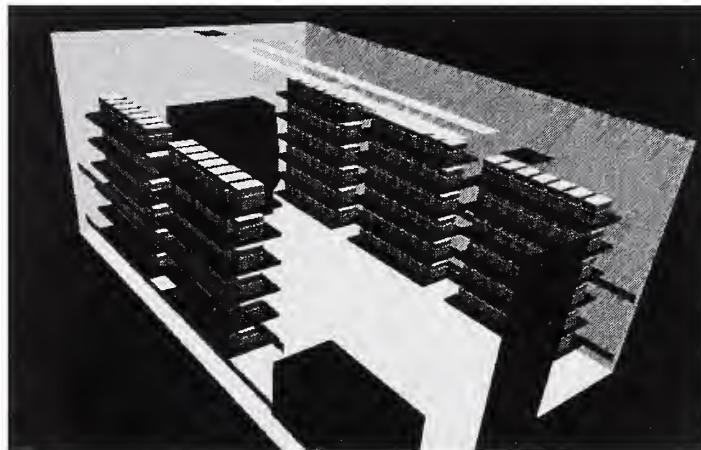
Room

ACH

15

Cage Condition

Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.02	71.64	2161	66.95%
S.D.	0.16	0.29	313	2.38%
Max.	22.30	72.15	2739	71.85%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.15	2.19	3.37	6.38	10.78	16.02	24.13	29.90	35.75	38.37
Max.	1.46	2.77	4.27	8.09	13.66	20.30	30.57	37.89	45.30	48.62

Room Breathing Zone

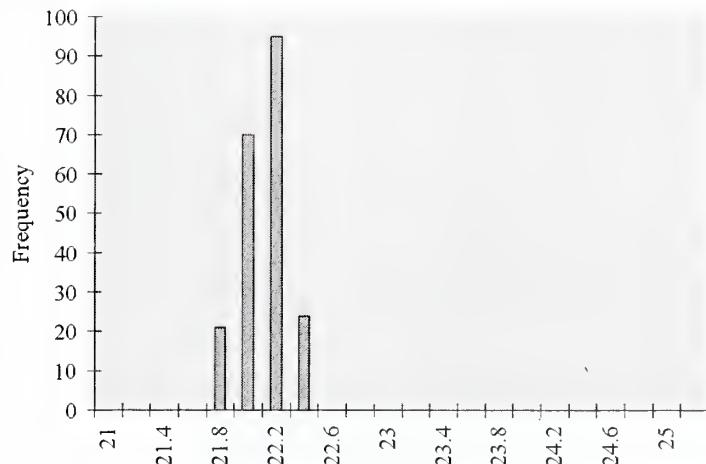
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.34	68.62	15	54.99%
S.D.	0.17	0.31	9	
Max.	21.22	70.20	90	

Room Breathing Zone NH3 (ppm)

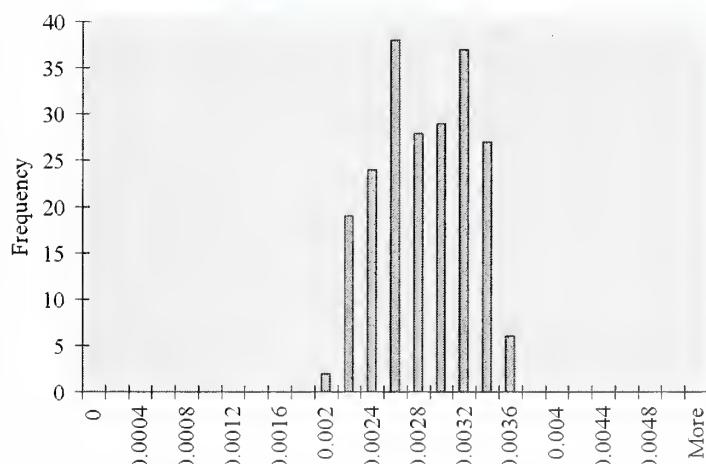
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.01	0.01	0.02	0.04	0.07	0.11	0.16	0.20	0.24	0.26
Max.	0.05	0.09	0.14	0.27	0.45	0.67	1.01	1.25	1.49	1.60

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



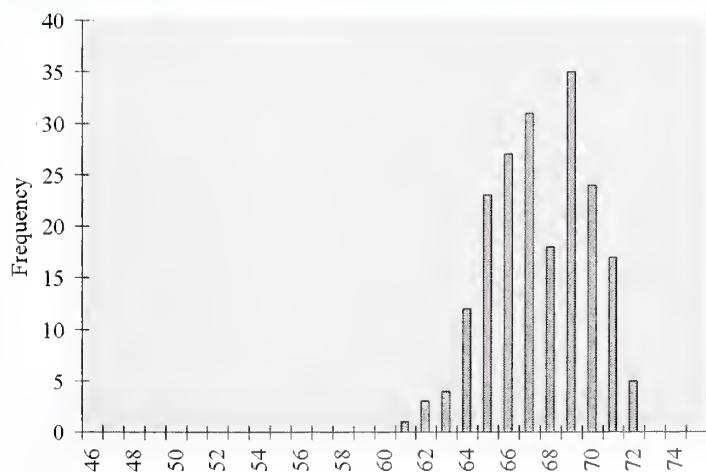
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	419
2	785000	795
3	785000	1225
4	785000	2318
5	785000	3916
6	785000	5819
7	785000	8763
8	785000	10860
9	785000	12984
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



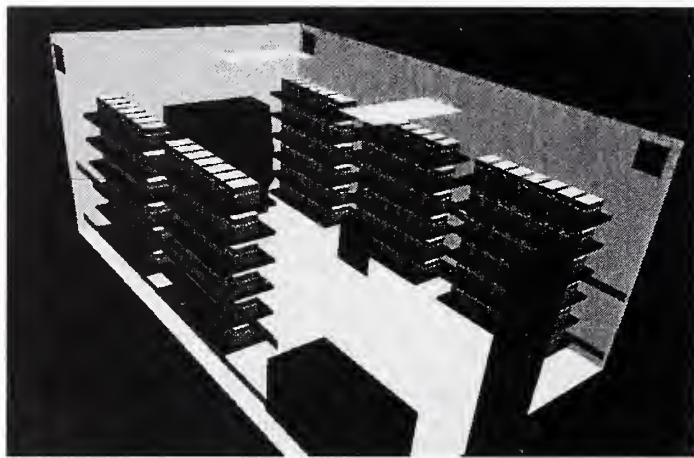
Casename

Case 60**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	High	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.89	71.40	2354	69.12%
S.D.	0.27	0.48	236	2.57%
Max.	22.37	72.26	2929	74.25%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.27	2.38	3.67	7.56	13.31	20.05	30.71	37.49	43.90	44.97
Max.	1.58	2.96	4.57	9.40	16.57	24.95	38.22	46.66	54.63	55.95

Room Breathing Zone

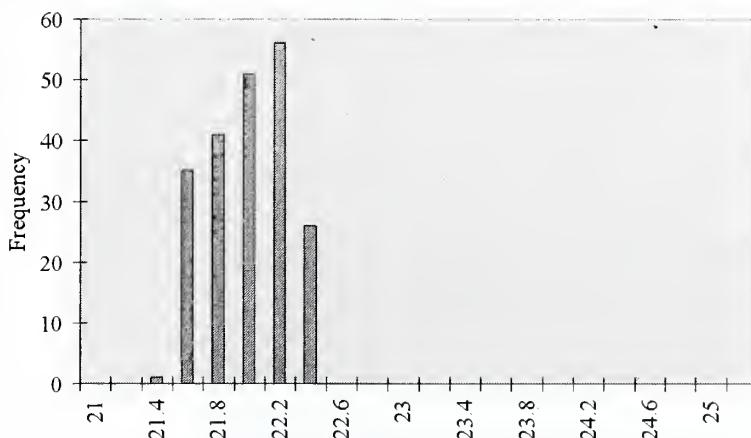
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.27	68.48	57	55.65%
S.D.	0.21	0.38	27	
Max.	21.26	70.26	174	

Room Breathing Zone NH₃ (ppm)

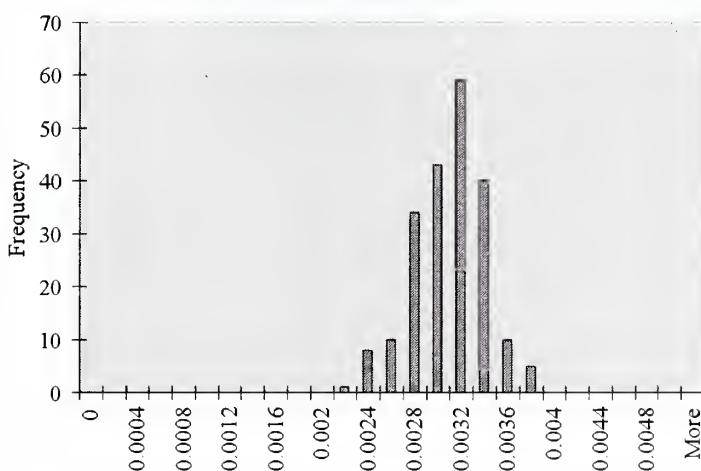
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.18	0.32	0.48	0.74	0.90	1.05	1.08
Max.	0.09	0.18	0.27	0.56	0.99	1.48	2.27	2.77	3.25	3.33

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



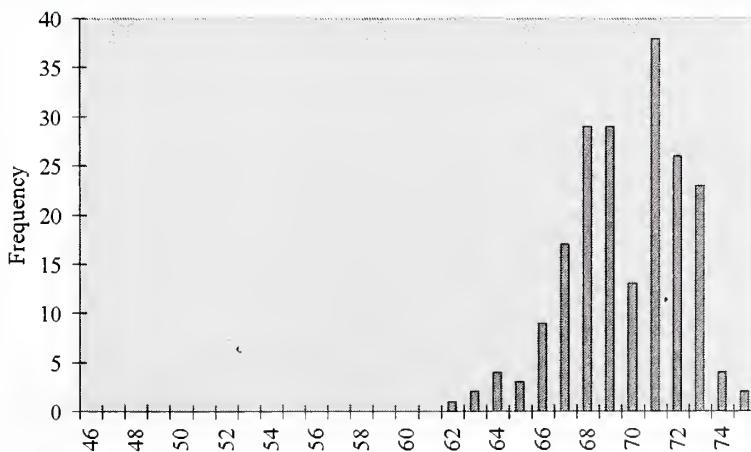
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	422
2	785000	795
3	785000	1225
4	785000	2520
5	785000	4439
6	785000	6686
7	785000	10242
8	785000	12503
9	785000	14641
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



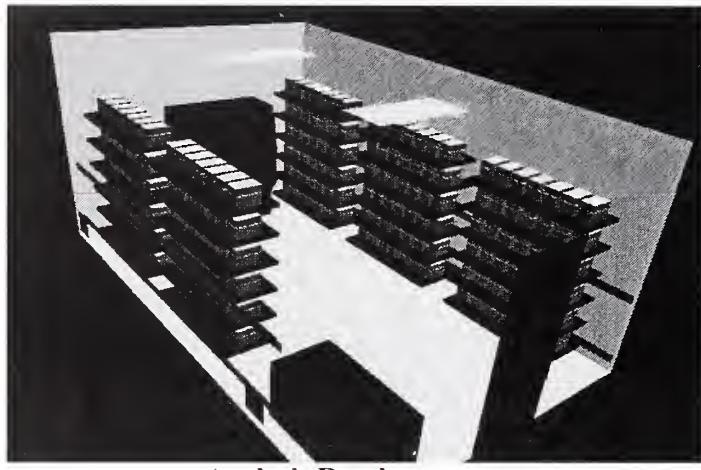
Casename

Case 61**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Low	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.13	73.63	2042	61.56%
S.D.	0.40	0.73	410	2.86%
Max.	24.05	75.29	2824	66.70%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.06	2.07	3.19	4.73	6.81	9.54	13.26	17.64	23.08	29.42
Max.	1.47	2.86	4.41	6.54	9.42	13.20	18.33	24.40	31.92	40.69

Room Breathing Zone

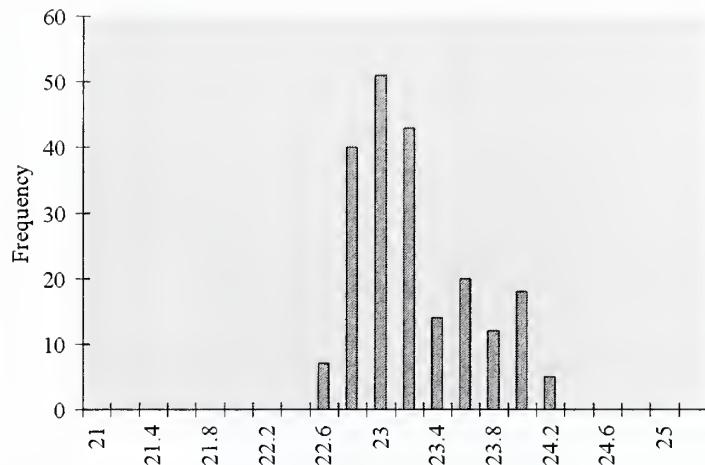
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.04	71.67	69	49.83%
S.D.	0.49	0.88	26	
Max.	23.21	73.77	310	

Room Breathing Zone NH₃ (ppm)

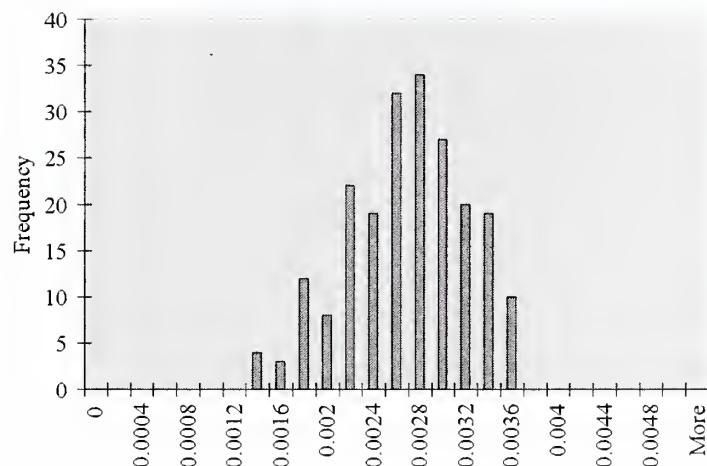
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.16	0.23	0.32	0.45	0.59	0.78	0.99
Max.	0.16	0.31	0.48	0.72	1.03	1.45	2.01	2.68	3.50	4.47

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution



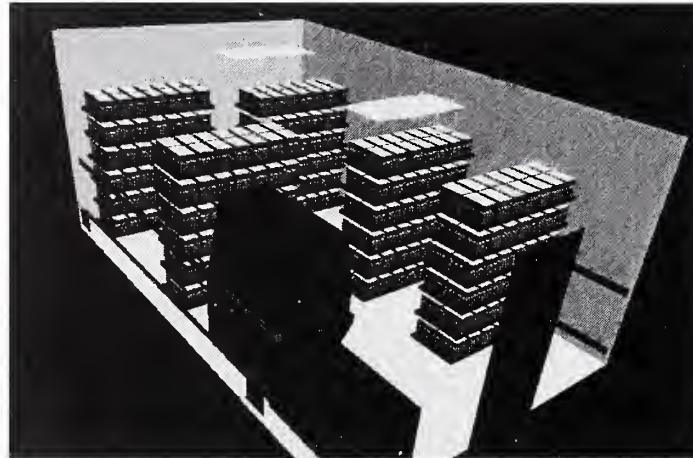
Casename

Case 62**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	6.6	89%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 5

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.87	69.56	2325	52.77%
S.D.	0.77	1.38	520	4.06%
Max.	22.64	72.75	3389	59.89%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.21	2.35	3.63	5.23	7.36	10.20	13.96	18.83	25.01	32.69
Max.	1.76	3.43	5.29	7.62	10.72	14.86	20.34	27.44	36.44	47.64

Room Breathing Zone

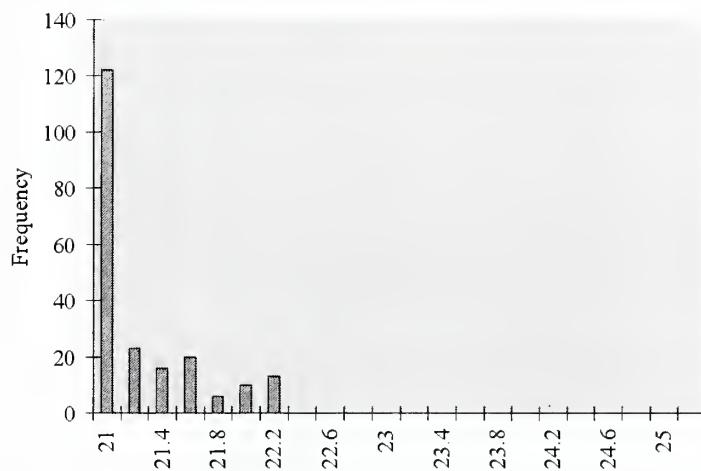
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.15	66.47	342	62.56%
S.D.	0.95	1.71	216	
Max.	25.27	77.49	897	

Room Breathing Zone NH₃ (ppm)

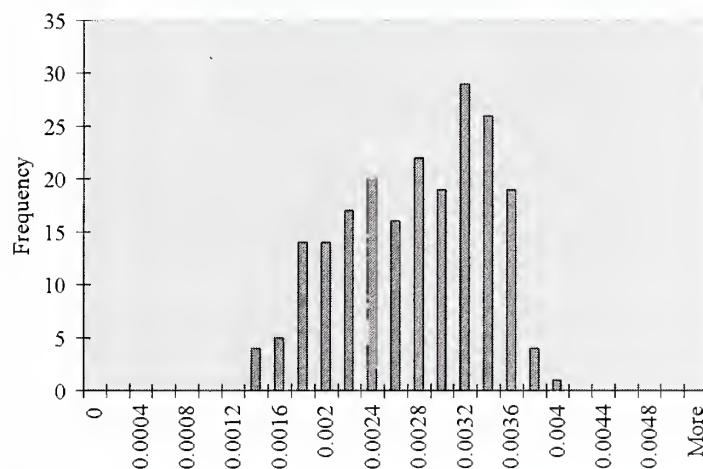
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.18	0.35	0.53	0.77	1.08	1.50	2.05	2.77	3.68	4.81
Max.	0.47	0.91	1.40	2.02	2.84	3.94	5.39	7.27	9.65	12.61

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



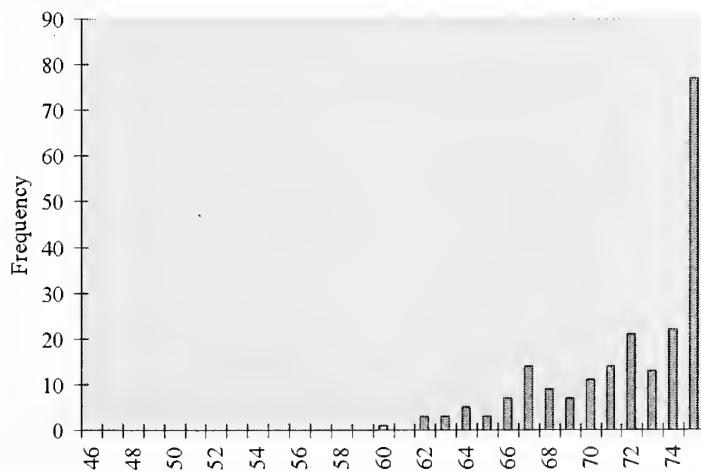
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2129
5	785000	3425
6	785000	5004
7	785000	7374
8	785000	9315
9	785000	11426
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

Case 63**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	14.8	79%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH
10

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.91	71.44	2081	64.91%
S.D.	0.53	0.95	523	3.42%
Max.	23.10	73.57	3402	72.86%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.10	2.11	3.25	5.64	9.08	13.26	19.55	24.69	30.29	34.30
Max.	1.80	3.44	5.31	9.23	14.84	21.69	31.96	40.37	49.52	56.09

Room Breathing Zone

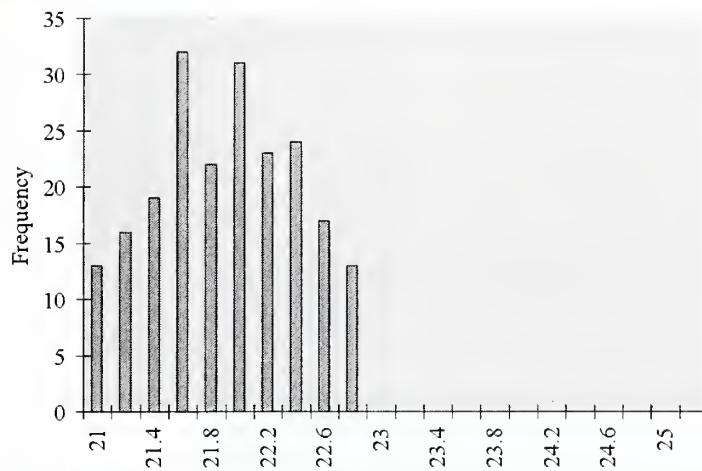
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.34	68.62	215	56.81%
S.D.	0.81	1.46	109	
Max.	26.82	80.28	650	

Room Breathing Zone NH3 (ppm)

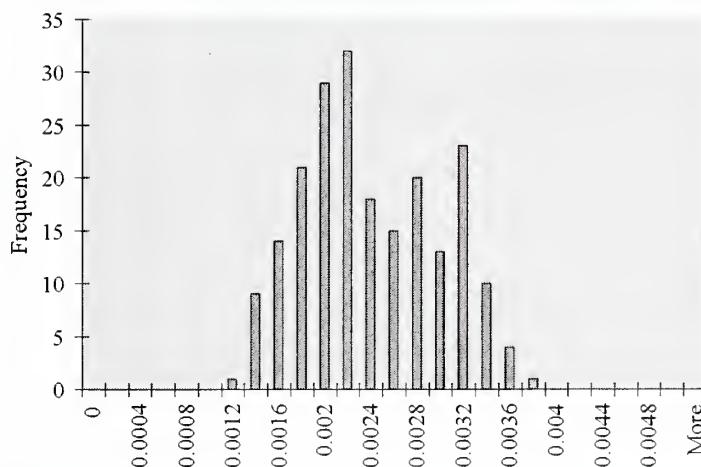
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.11	0.22	0.34	0.58	0.94	1.37	2.02	2.55	3.13	3.54
Max.	0.34	0.66	1.01	1.76	2.83	4.14	6.10	7.71	9.46	10.71

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



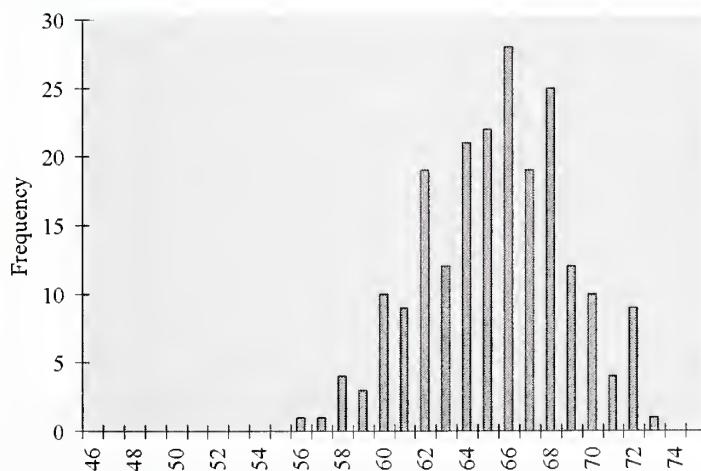
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2129
5	785000	3425
6	785000	5004
7	785000	7374
8	785000	9315
9	785000	11426
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



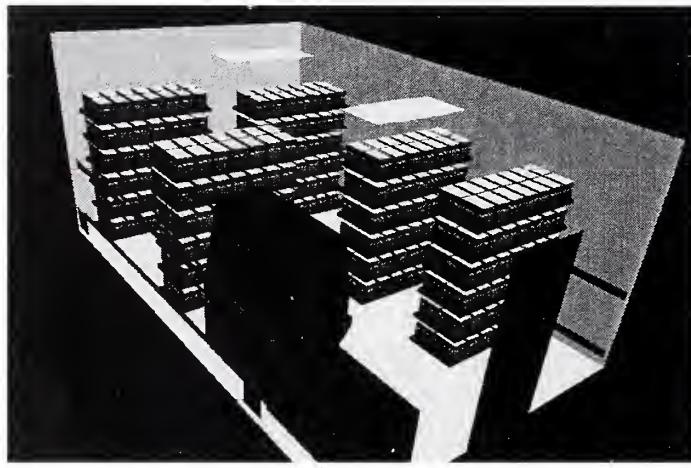
Casename

Case 64**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.9	60%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
20

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.66	72.79	1808	60.21%
S.D.	0.28	0.50	422	2.96%
Max.	23.34	74.02	2618	67.10%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.94	1.83	2.82	4.07	5.72	7.93	10.85	14.64	19.44	25.42
Max.	1.36	2.65	4.09	5.89	8.28	11.48	15.71	21.20	28.15	36.80

Room Breathing Zone

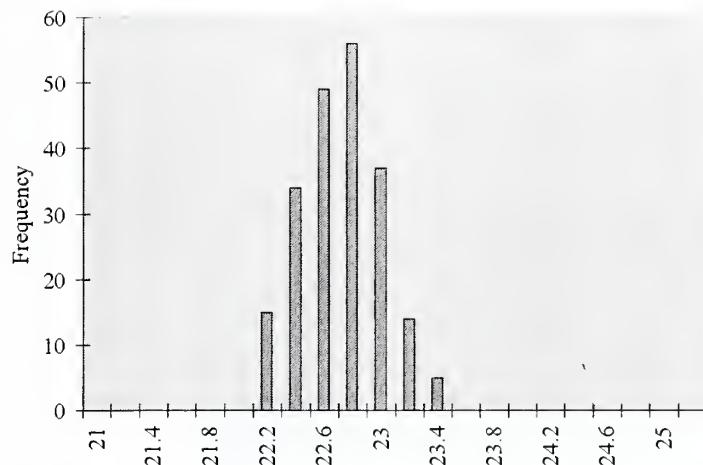
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.17	70.10	93	52.87%
S.D.	0.71	1.27	47	
Max.	27.72	81.89	324	

Room Breathing Zone NH₃ (ppm)

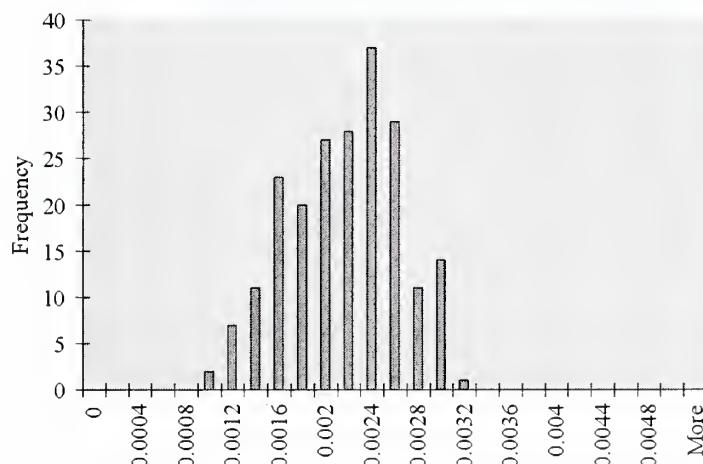
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.09	0.15	0.21	0.29	0.41	0.56	0.75	1.00	1.31
Max.	0.17	0.33	0.51	0.73	1.02	1.42	1.94	2.62	3.48	4.55

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

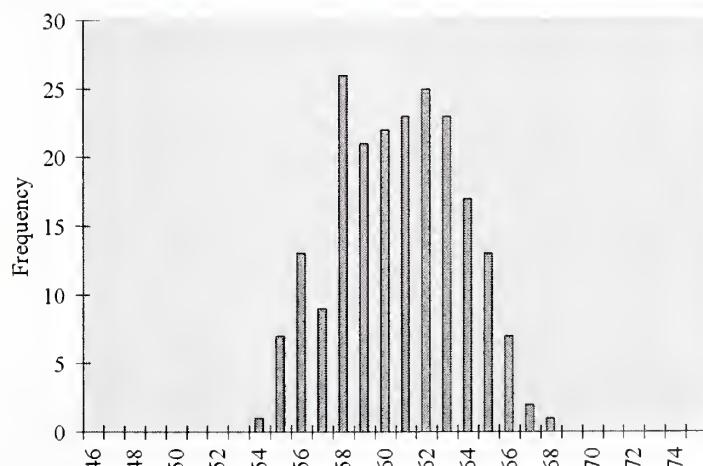


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



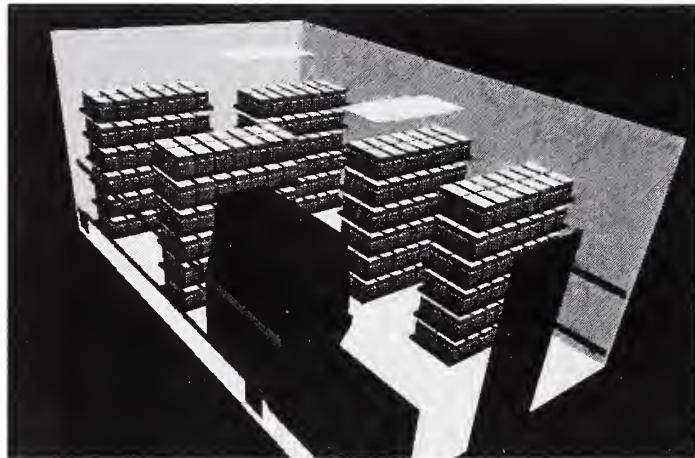
Casename

Case 65**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	17.5	66%	Low	22	50%
Change Station ON alt design	Rack Orientation Perp	Rack Density Double	Number of Mice in Room 2100	Total mass of Mice in Room 42000 gr	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.43	72.37	2002	62.67%
S.D.	0.29	0.52	461	2.88%
Max.	23.21	73.77	3148	69.19%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.05	2.03	3.12	4.90	7.36	10.48	14.92	19.44	24.79	30.23
Max.	1.65	3.19	4.91	7.70	11.57	16.49	23.46	30.57	38.97	47.53

Room Breathing Zone

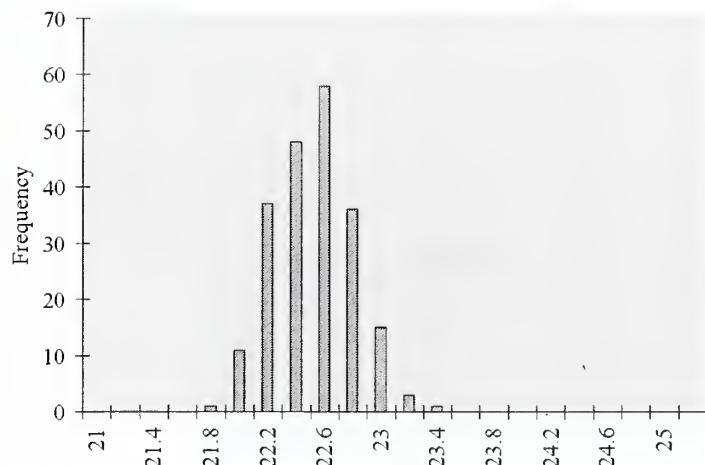
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.83	69.49	133	54.38%
S.D.	0.39	0.71	50	
Max.	21.70	71.07	321	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.07	0.14	0.21	0.33	0.49	0.70	0.99	1.30	1.65	2.01
Max.	0.17	0.32	0.50	0.79	1.18	1.68	2.39	3.12	3.97	4.85

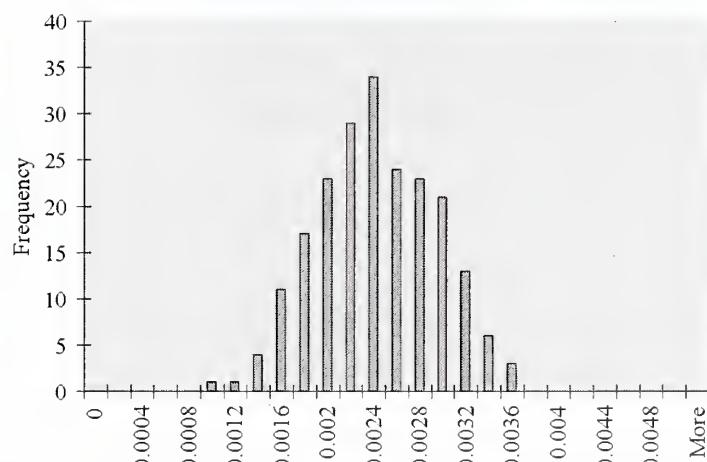
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



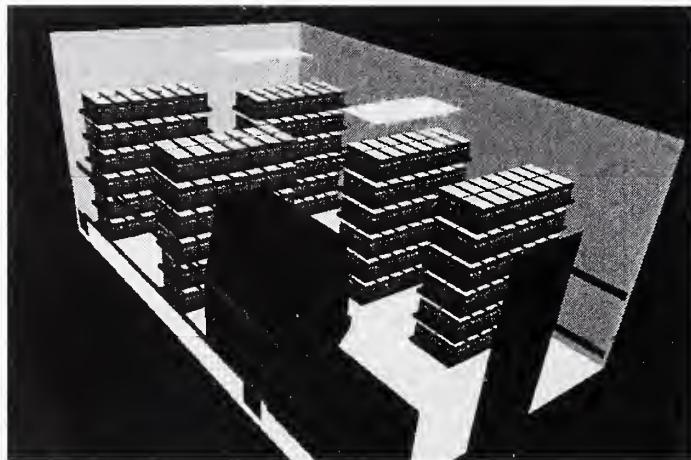
Casename

Case 66**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	6.6	89%	Low	22	50%
Change Station ON alt design	Rack Orientation Perp	Rack Density Double	Number of Mice in Room 2100	Total mass of Mice in Room 42000 gr	Room Pressurisation neg 100cfm

Room ACH 5

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.61	69.09	2318	52.96%
S.D.	0.61	1.09	529	4.37%
Max.	21.89	71.40	3468	61.72%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.21	2.35	3.62	5.21	7.33	10.17	13.91	18.77	24.92	32.58
Max.	1.80	3.51	5.41	7.80	10.97	15.21	20.82	28.08	37.30	48.76

Room Breathing Zone

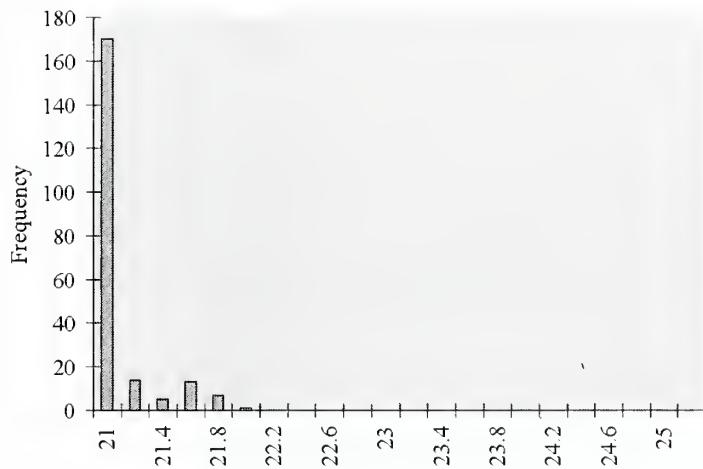
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	18.65	65.56	318	64.38%
S.D.	0.68	1.22	117	
Max.	20.41	68.75	819	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.17	0.32	0.50	0.72	1.01	1.40	1.91	2.58	3.42	4.47
Max.	0.43	0.83	1.28	1.84	2.59	3.59	4.91	6.63	8.81	11.51

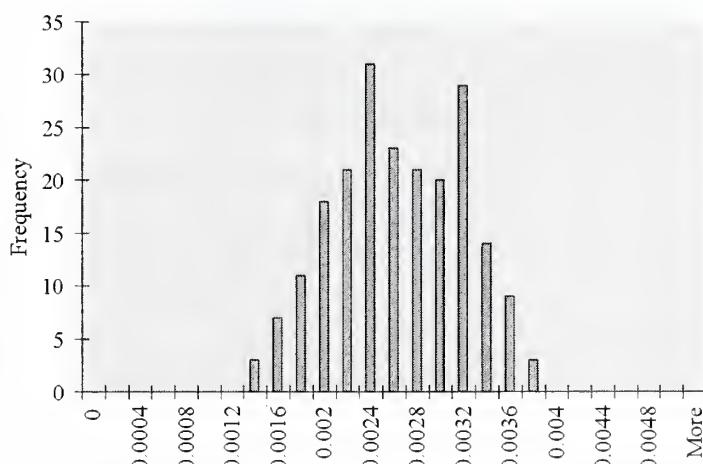
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



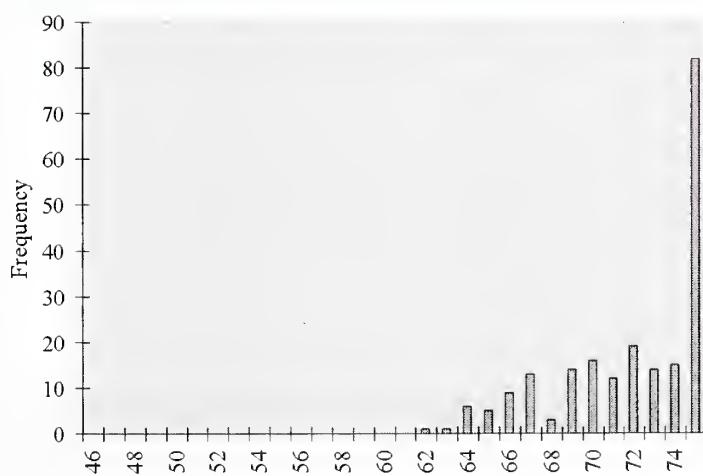
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

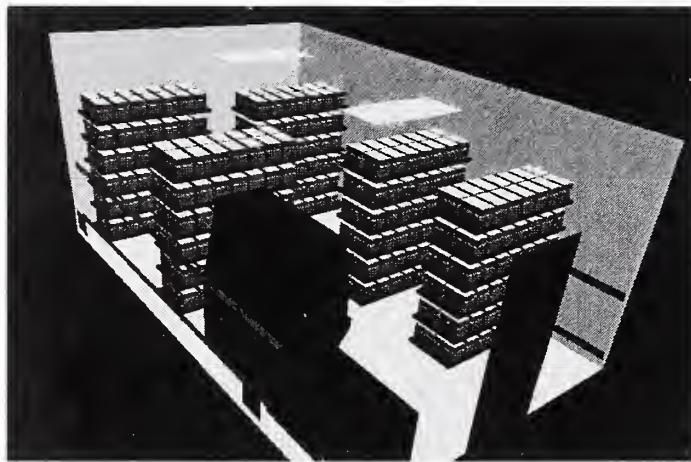
Case 67

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	14.8	79%	Low	22	50%
Change Station ON alt design	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
Perp	Double	2100	42000 gr		

Room ACH
10

Cage Condition
Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.87	71.37	2144	65.77%
S.D.	0.45	0.80	509	3.79%
Max.	22.90	73.22	3404	72.36%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.14	2.17	3.34	6.03	9.92	14.61	21.75	27.23	33.01	36.49
Max.	1.81	3.45	5.31	9.58	15.76	23.20	34.53	43.24	52.41	57.95

Room Breathing Zone

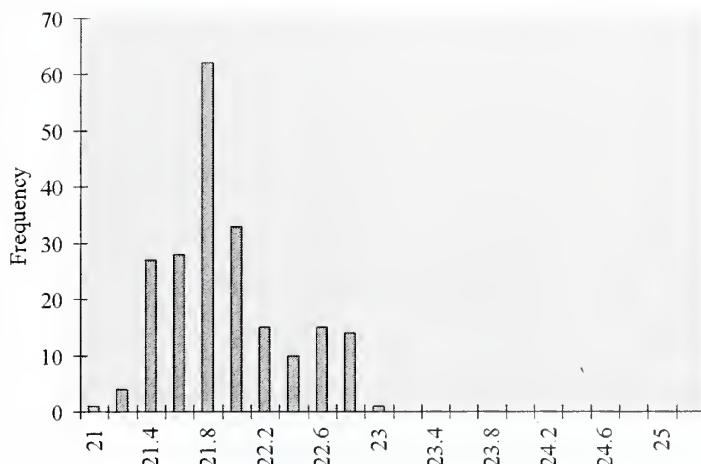
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.19	68.35	201	57.23%
S.D.	0.52	0.93	90	
Max.	21.51	70.72	623	

Room Breathing Zone NH₃ (ppm)

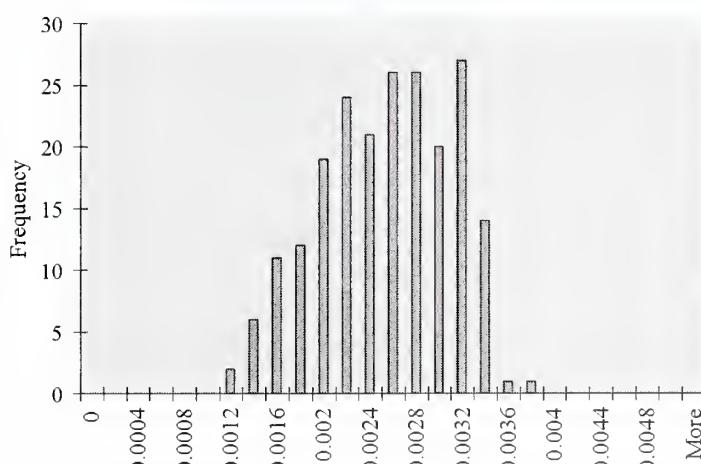
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.11	0.20	0.31	0.57	0.93	1.37	2.04	2.55	3.10	3.42
Max.	0.33	0.63	0.97	1.75	2.88	4.25	6.32	7.92	9.60	10.61

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



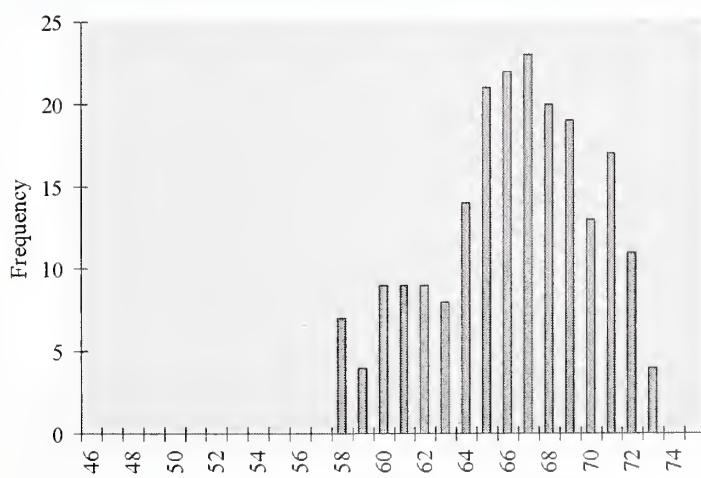
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	417
2	785000	795
3	785000	1225
4	785000	2209
5	785000	3633
6	785000	5350
7	785000	7963
8	785000	9970
9	785000	12087
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

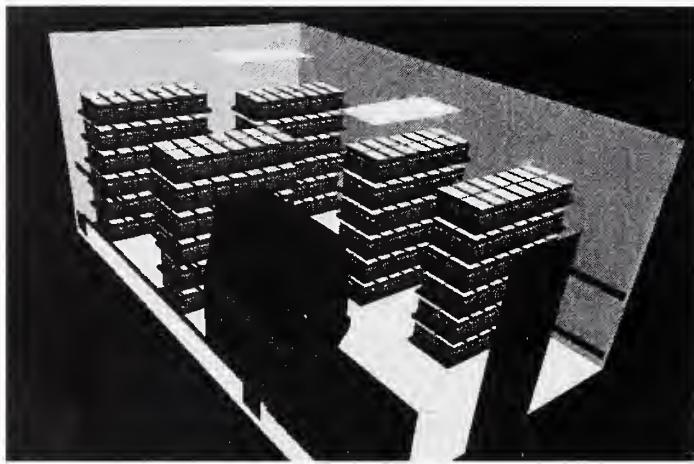


Casename

Case 68**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.9	60%	Low	22	50%
Change Station ON alt design	Rack Orientation Perp	Rack Density Double	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
Room ACH 20					

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.75	72.95	1838	60.41%
S.D.	0.23	0.41	432	2.49%
Max.	23.21	73.77	2899	66.53%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.96	1.86	2.87	4.13	5.81	8.06	11.03	14.89	19.77	25.84
Max.	1.51	2.93	4.52	6.52	9.17	12.71	17.40	23.47	31.17	40.75

Room Breathing Zone

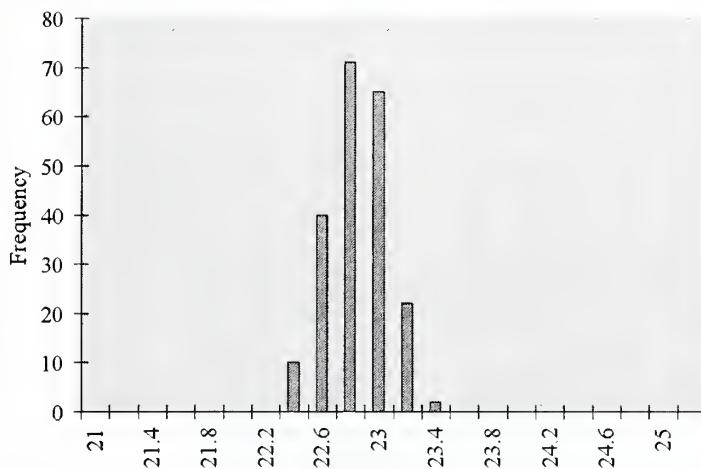
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.23	70.22	93	52.65%
S.D.	0.31	0.55	43	
Max.	22.20	71.95	262	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.09	0.15	0.21	0.29	0.41	0.56	0.75	1.00	1.31
Max.	0.14	0.26	0.41	0.59	0.83	1.15	1.57	2.12	2.81	3.68

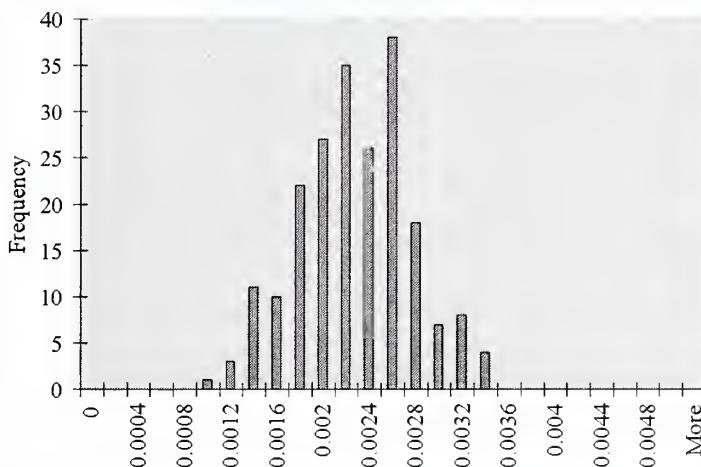
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



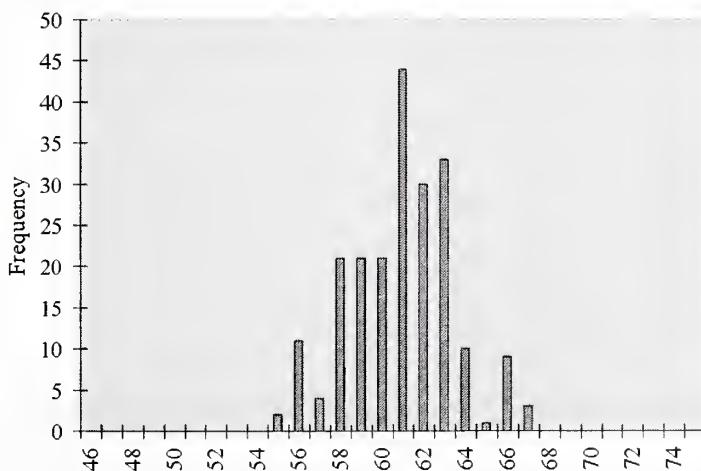
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

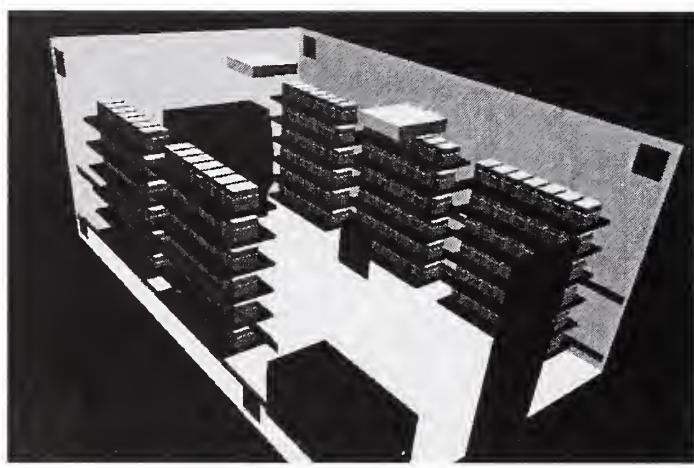


Casename

Case 69

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	High x4 / Low x4	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.73	72.91	1750	60.88%
S.D.	0.37	0.67	328	2.88%
Max.	23.85	74.93	2582	66.91%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.77	2.73	3.94	5.54	7.68	10.51	14.17	18.82	24.61
Max.	1.34	2.61	4.03	5.81	8.17	11.33	15.50	20.91	27.77	36.30

Room Breathing Zone

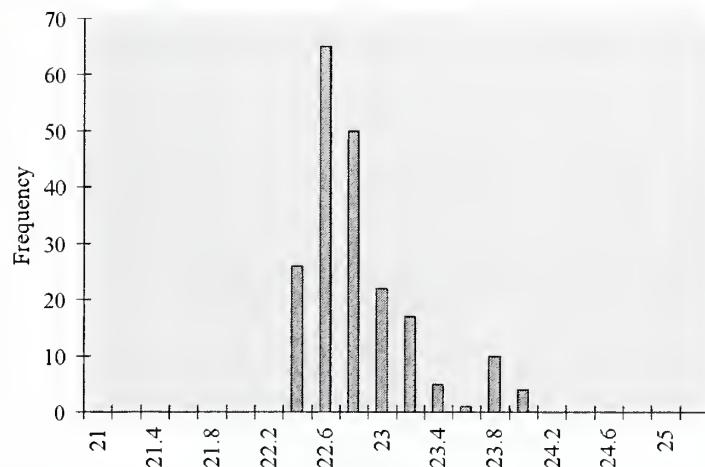
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.25	70.25	51	52.23%
S.D.	0.25	0.44	35	
Max.	22.03	71.66	260	

Room Breathing Zone NH₃ (ppm)

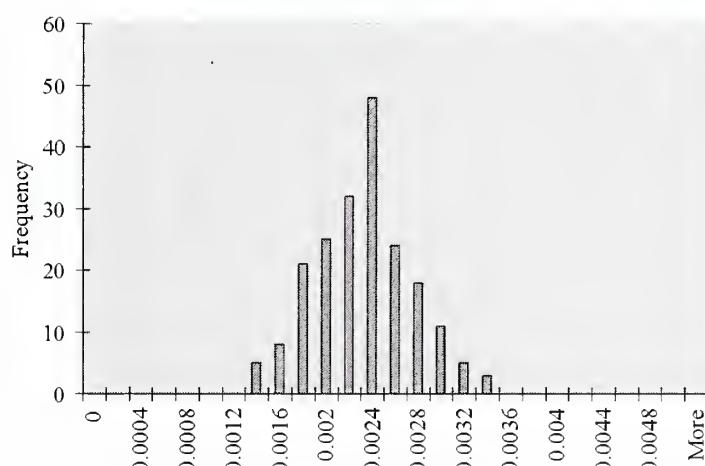
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.12	0.16	0.22	0.31	0.41	0.55	0.72
Max.	0.14	0.26	0.41	0.59	0.82	1.14	1.56	2.11	2.80	3.66

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



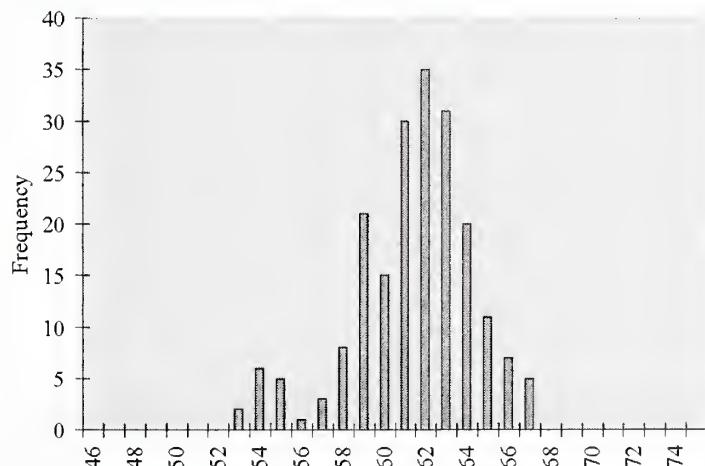
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

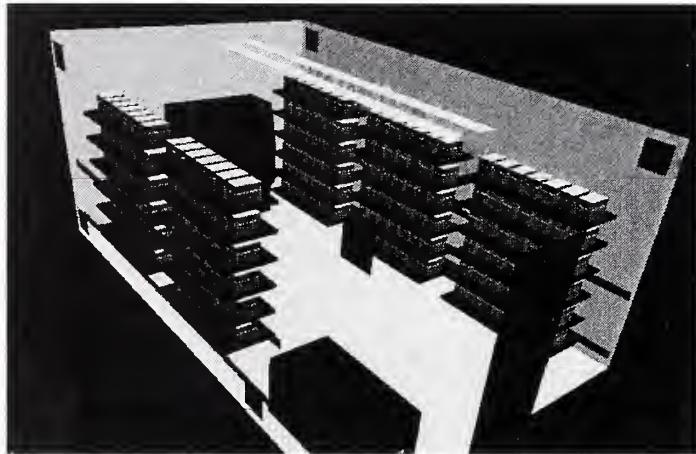
Case 70

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	High x4 / Low x4	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.89	73.20	1955	61.79%
S.D.	0.39	0.71	371	2.32%
Max.	23.83	74.90	2741	66.48%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.02	1.98	3.05	4.58	6.66	9.36	13.08	17.32	22.53	28.44
Max.	1.43	2.77	4.28	6.42	9.33	13.12	18.33	24.28	31.58	39.88

Room Breathing Zone

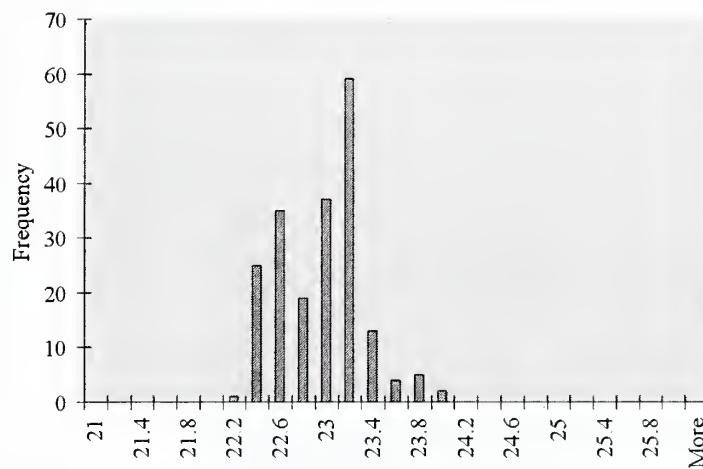
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.45	70.60	24	51.36%
S.D.	0.37	0.67	14	
Max.	22.53	72.55	122	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.01	0.02	0.04	0.06	0.08	0.11	0.16	0.21	0.28	0.35
Max.	0.06	0.12	0.19	0.29	0.42	0.58	0.82	1.08	1.41	1.78

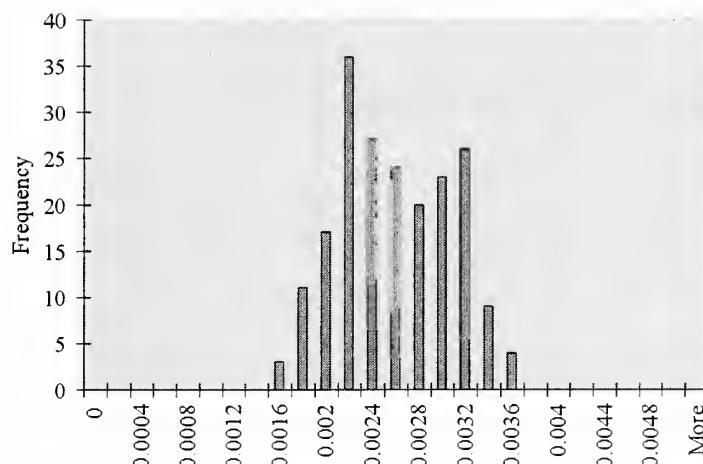
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



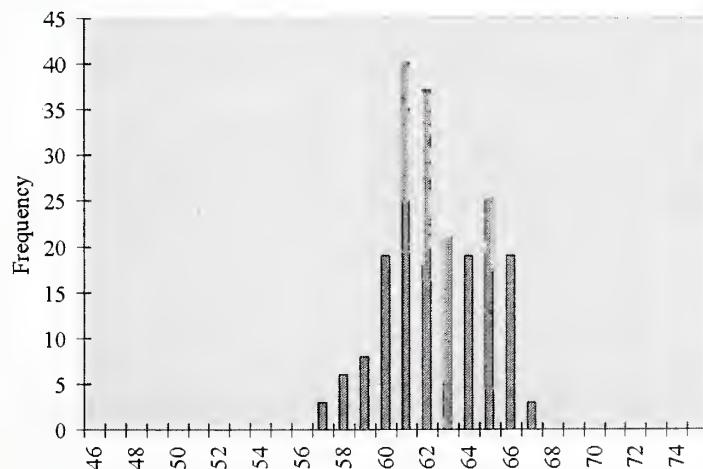
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	410
2	785000	795
3	785000	1225
4	785000	1839
5	785000	2673
6	785000	3758
7	785000	5250
8	785000	6954
9	785000	9045
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

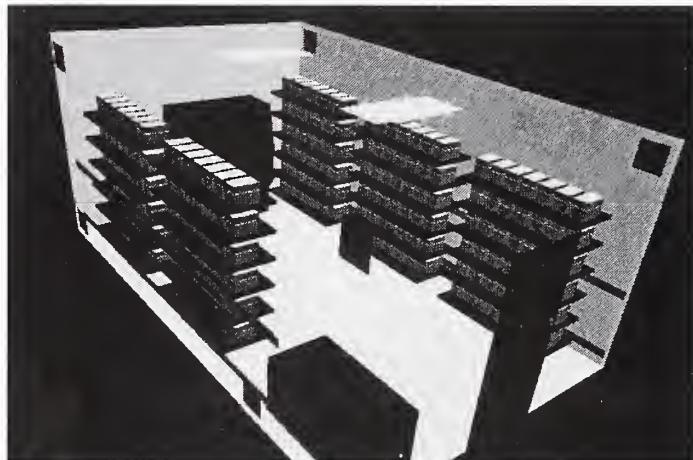


Casename

Case 71

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	High x4 / Low x4	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.97	73.35	1968	61.59%
S.D.	0.38	0.69	339	2.42%
Max.	23.95	75.10	2683	66.10%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.03	1.99	3.07	4.56	6.58	9.22	12.82	17.06	22.30	28.39
Max.	1.40	2.72	4.19	6.22	8.97	12.58	17.48	23.26	30.40	38.70

Room Breathing Zone

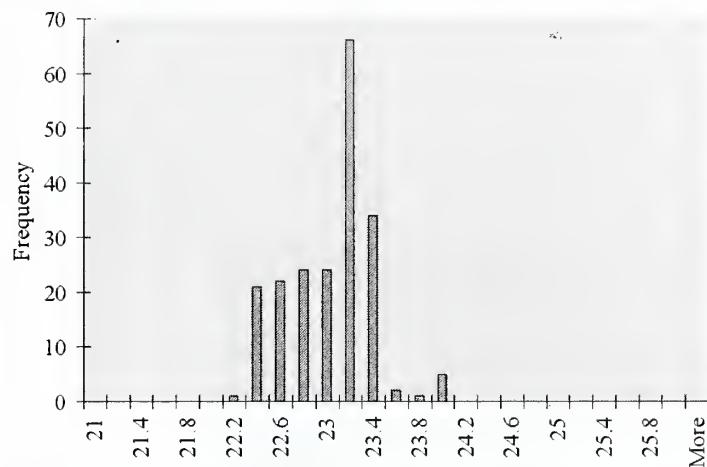
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.56	70.81	51	51.22%
S.D.	0.33	0.59	25	
Max.	22.41	72.35	305	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.12	0.17	0.24	0.34	0.45	0.58	0.74
Max.	0.16	0.31	0.48	0.71	1.02	1.43	1.99	2.65	3.46	4.40

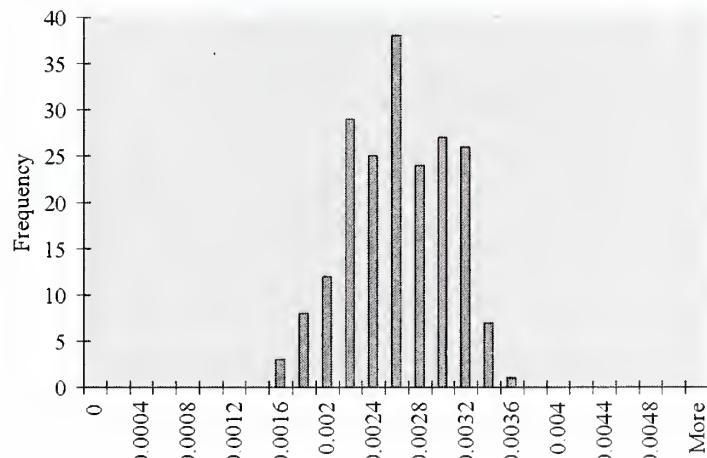
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)

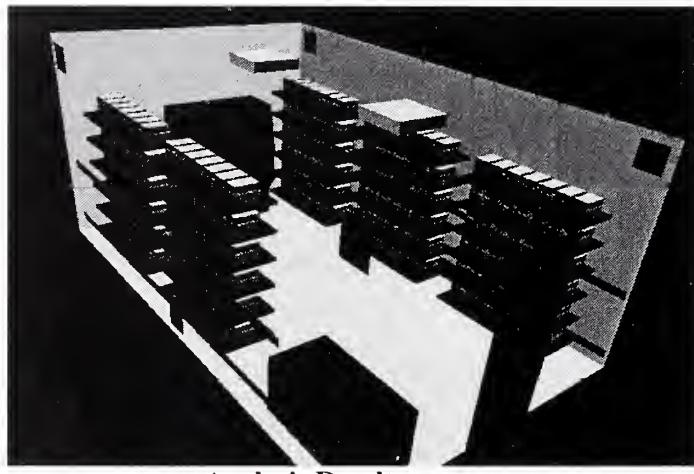


Casename

Case 72

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	High x4 / Low x2	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.53	72.56	1790	61.90%
S.D.	0.31	0.55	355	2.67%
Max.	23.69	74.65	2663	67.80%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.93	1.81	2.79	4.22	6.15	8.67	12.14	16.04	20.81	26.16
Max.	1.39	2.69	4.15	6.27	9.16	12.90	18.06	23.87	30.96	38.92

Room Breathing Zone

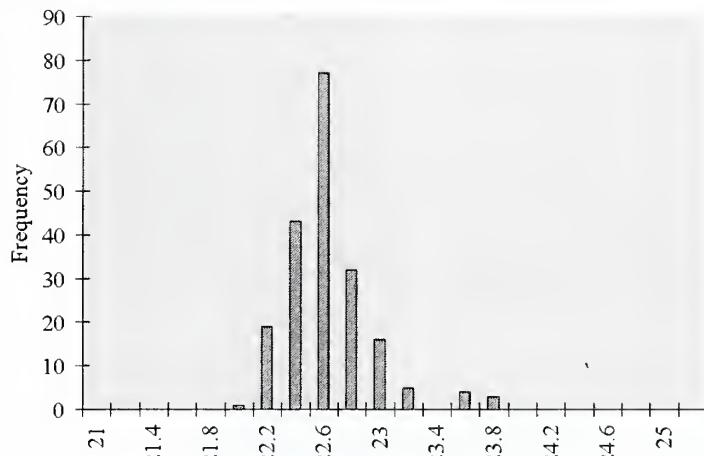
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.06	69.91	48	52.83%
S.D.	0.23	0.42	29	
Max.	21.79	71.23	253	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.07	0.11	0.17	0.23	0.33	0.43	0.56	0.70
Max.	0.13	0.26	0.40	0.60	0.87	1.23	1.72	2.27	2.95	3.70

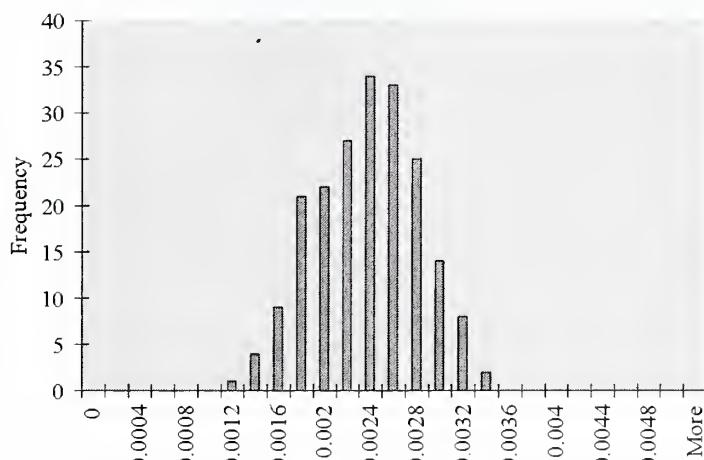
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



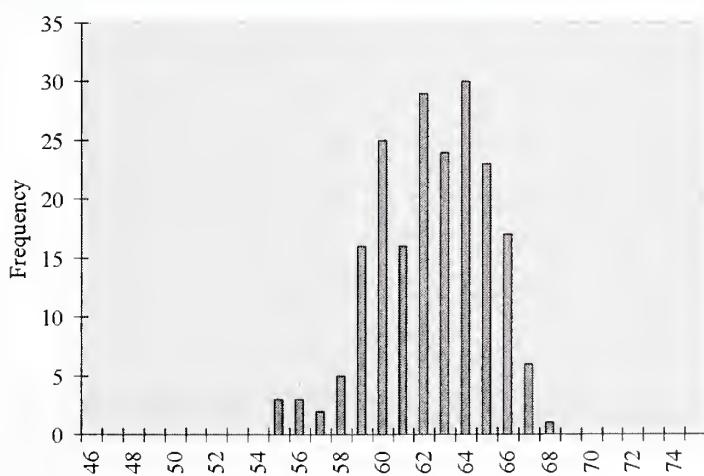
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	418
2	785000	795
3	785000	1225
4	785000	2303
5	785000	3876
6	785000	5752
7	785000	8650
8	785000	10734
9	785000	12856
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

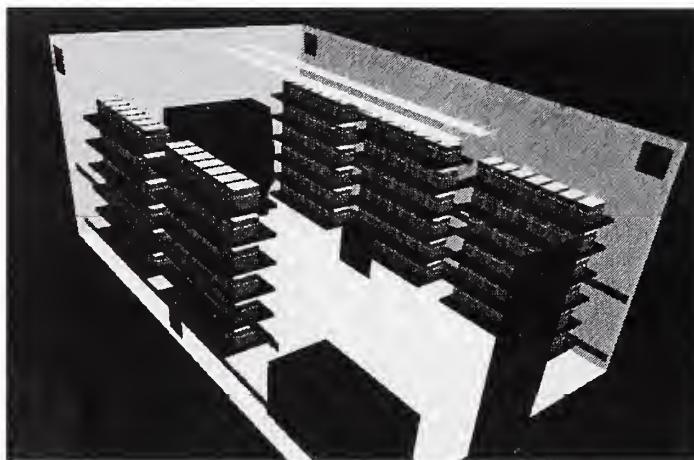
Case 73

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	High x4 / Low x2	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.62	72.71	1966	62.95%
S.D.	0.33	0.59	397	2.62%
Max.	23.53	74.35	2701	67.74%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.03	1.99	3.07	4.87	7.39	10.57	15.12	19.61	24.86	30.01
Max.	1.42	2.73	4.22	6.70	10.16	14.53	20.78	26.95	34.17	41.25

Room Breathing Zone

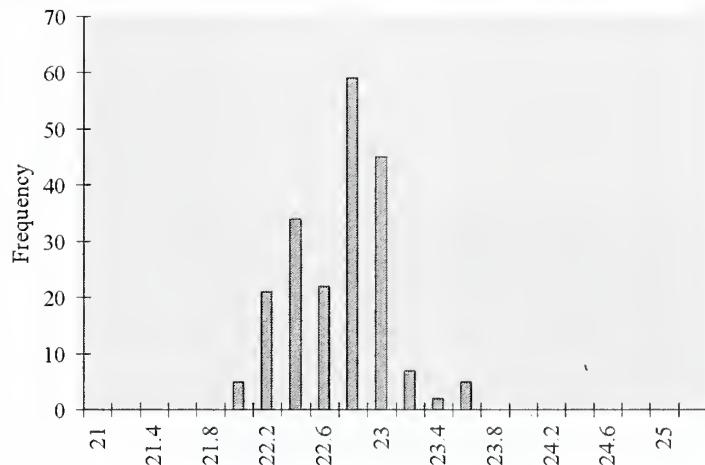
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.11	69.99	37	52.59%
S.D.	0.30	0.54	17	
Max.	22.05	71.69	146	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.09	0.14	0.20	0.28	0.37	0.47	0.56
Max.	0.08	0.15	0.23	0.36	0.55	0.78	1.12	1.45	1.84	2.22

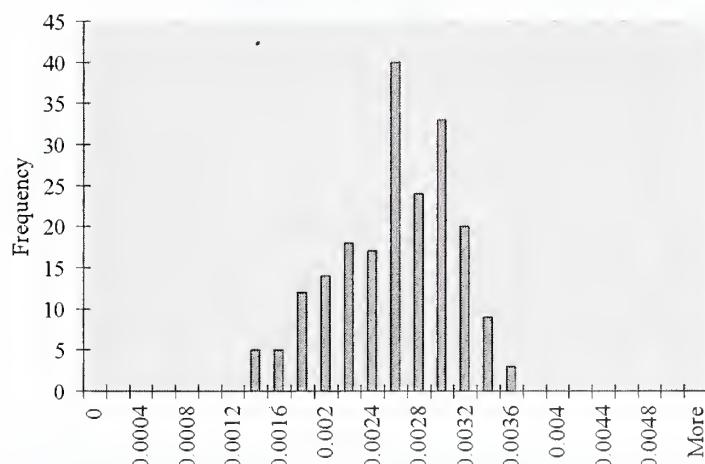
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



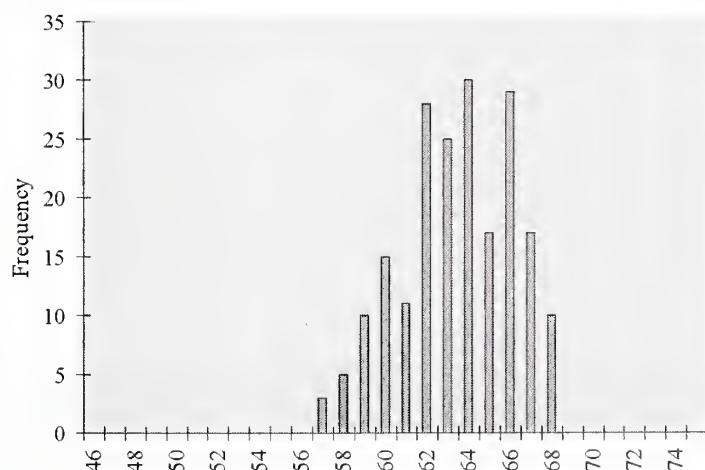
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	412
2	785000	795
3	785000	1225
4	785000	1947
5	785000	2952
6	785000	4221
7	785000	6038
8	785000	7831
9	785000	9929
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



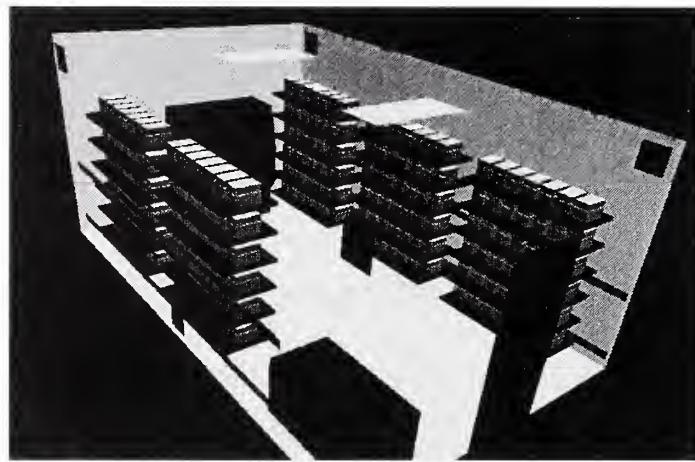
Casename

Case 74**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	High x4 / Low x2	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.62	72.71	1884	62.32%
S.D.	0.29	0.51	345	2.56%
Max.	23.56	74.41	2633	67.44%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.99	1.91	2.94	4.53	6.72	9.53	13.46	17.65	22.68	28.03
Max.	1.38	2.66	4.11	6.33	9.39	13.31	18.81	24.66	31.69	39.17

Room Breathing Zone

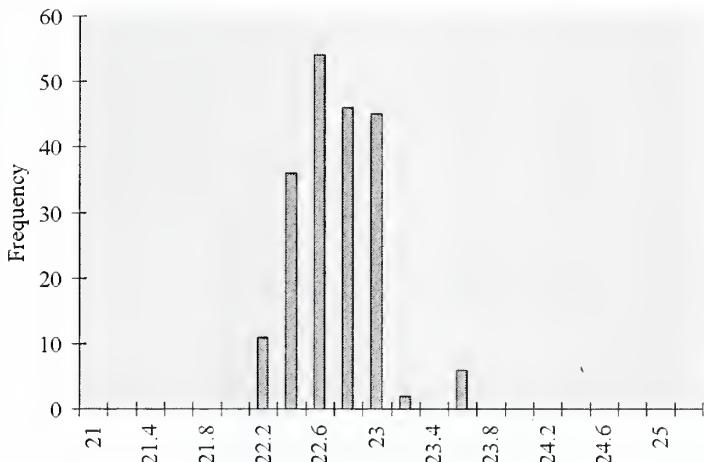
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.09	69.96	48	52.74%
S.D.	0.31	0.56	22	
Max.	22.37	72.26	247	

Room Breathing Zone NH3 (ppm)

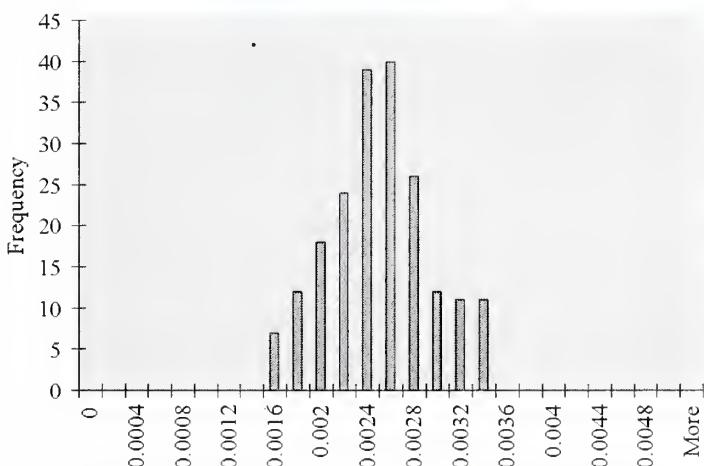
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.05	0.07	0.11	0.17	0.24	0.34	0.45	0.57	0.71
Max.	0.13	0.25	0.39	0.59	0.88	1.25	1.77	2.32	2.98	3.68

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



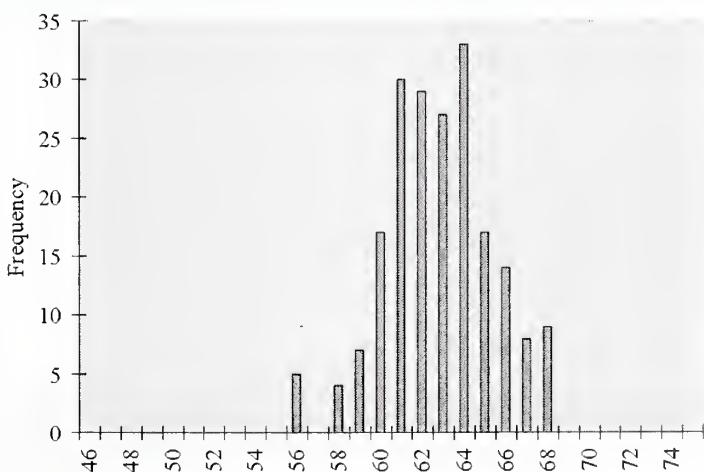
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1888
5	785000	2800
6	785000	3969
7	785000	5609
8	785000	7353
9	785000	9447
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

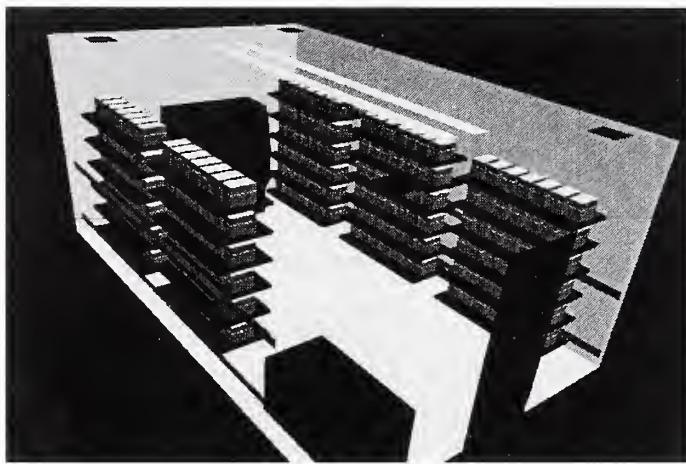


Casename

Case 75

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling/Low 50/50	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On

Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.88	71.38	1839	64.89%
S.D.	0.19	0.34	362	2.56%
Max.	22.31	72.15	2622	69.92%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.97	1.86	2.87	4.98	8.01	11.70	17.24	21.79	26.73	30.30
Max.	1.39	2.65	4.09	7.10	11.42	16.69	24.58	31.06	38.11	43.20

Room Breathing Zone

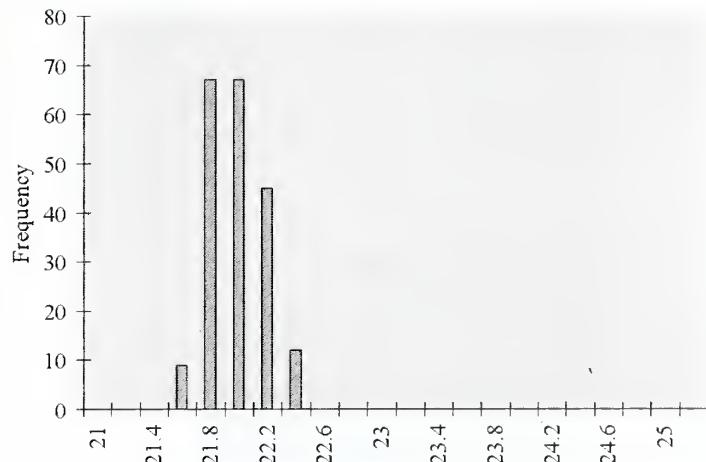
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.09	69.96	48	52.74%
S.D.	0.31	0.56	22	
Max.	22.37	72.26	247	

Room Breathing Zone NH3 (ppm)

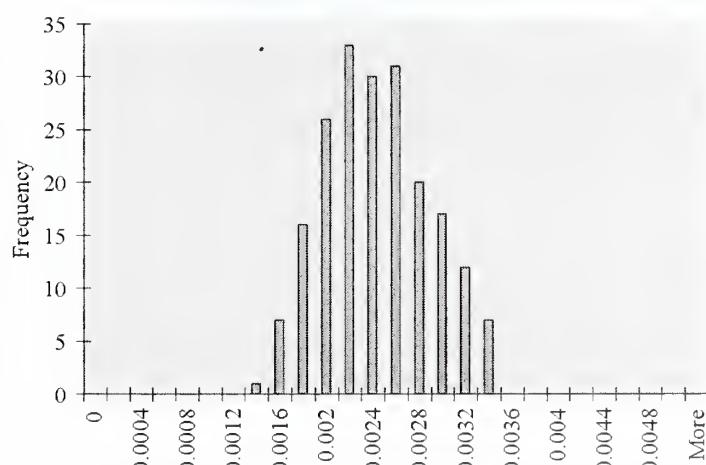
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.07	0.13	0.21	0.30	0.45	0.57	0.69	0.79
Max.	0.13	0.25	0.39	0.67	1.08	1.57	2.32	2.93	3.60	4.07

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



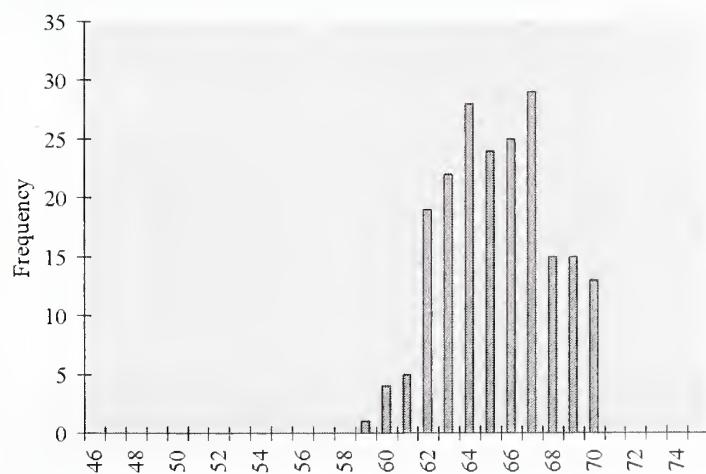
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2127
5	785000	3420
6	785000	4996
7	785000	7360
8	785000	9300
9	785000	11410
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



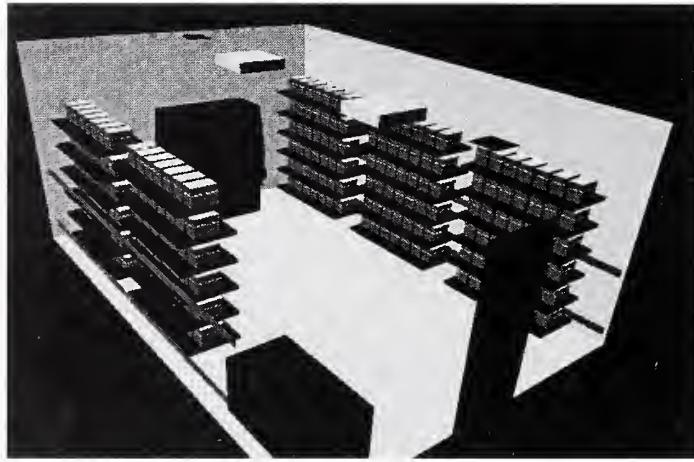
Casename

Case 76**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.13	71.83	1857	64.05%
S.D.	0.18	0.32	302	2.32%
Max.	22.89	73.21	2435	68.79%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.98	1.88	2.90	4.85	7.61	11.03	16.07	20.51	25.49	29.63
Max.	1.28	2.46	3.80	6.36	9.98	14.46	21.07	26.89	33.42	38.85

Room Breathing Zone

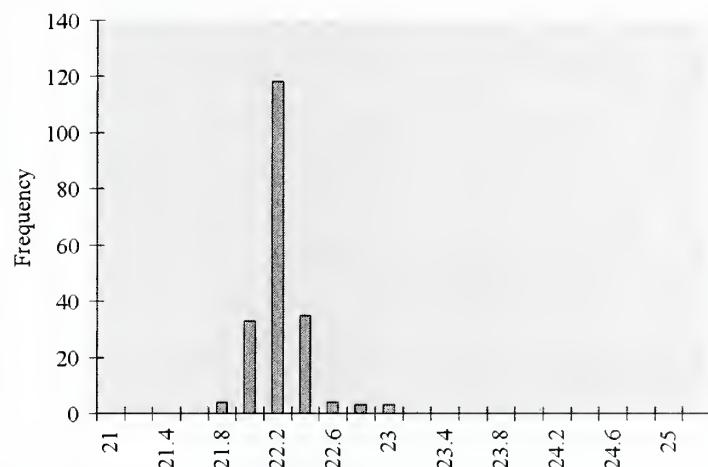
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.39	68.71	55	55.19%
S.D.	0.19	0.35	27	
Max.	21.23	70.21	236	

Room Breathing Zone NH3 (ppm)

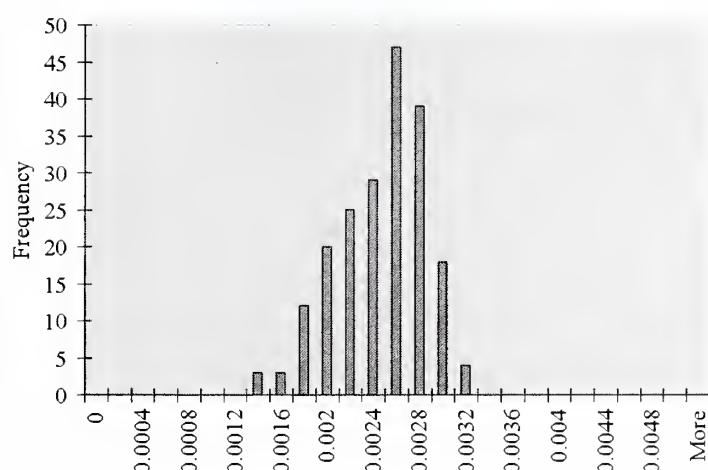
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.14	0.23	0.33	0.48	0.61	0.76	0.88
Max.	0.12	0.24	0.37	0.62	0.97	1.40	2.04	2.61	3.24	3.77

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



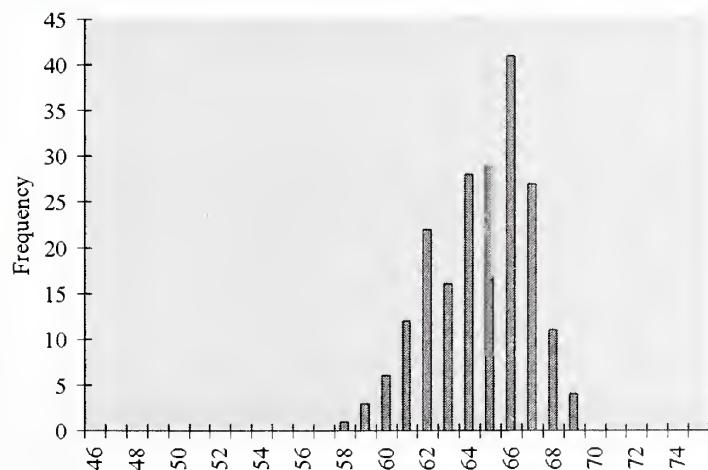
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2049
5	785000	3218
6	785000	4662
7	785000	6791
8	785000	8667
9	785000	10772
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

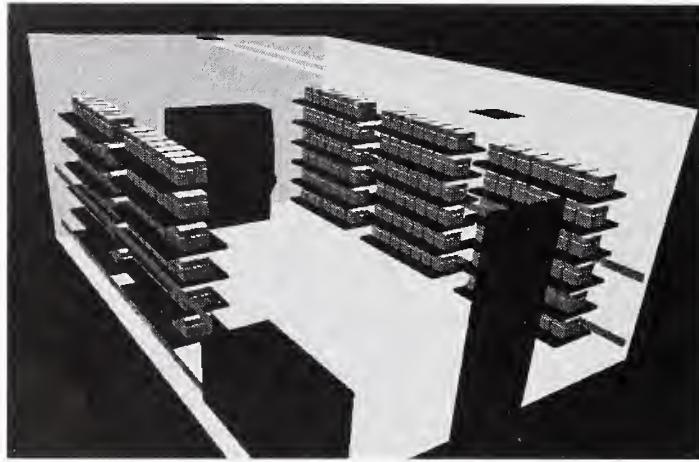
Case 77

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15

Cage Condition
Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.14	71.86	1881	64.17%
S.D.	0.26	0.46	351	2.58%
Max.	22.90	73.22	2652	70.61%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.99	1.90	2.93	4.94	7.78	11.29	16.47	20.98	26.03	30.15
Max.	1.40	2.68	4.14	6.96	10.97	15.91	23.22	29.59	36.70	42.51

Room Breathing Zone

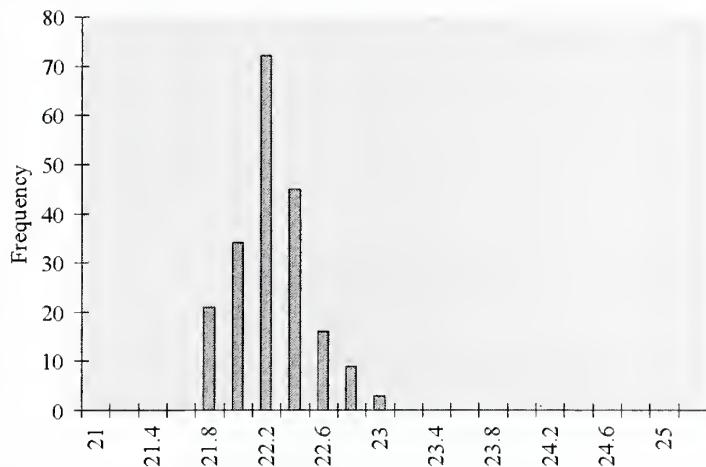
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.39	68.70	50	55.16%
S.D.	0.23	0.42	21	
Max.	21.44	70.59	191	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.05	0.08	0.13	0.21	0.30	0.44	0.56	0.70	0.81
Max.	0.10	0.19	0.30	0.50	0.79	1.14	1.67	2.13	2.64	3.06

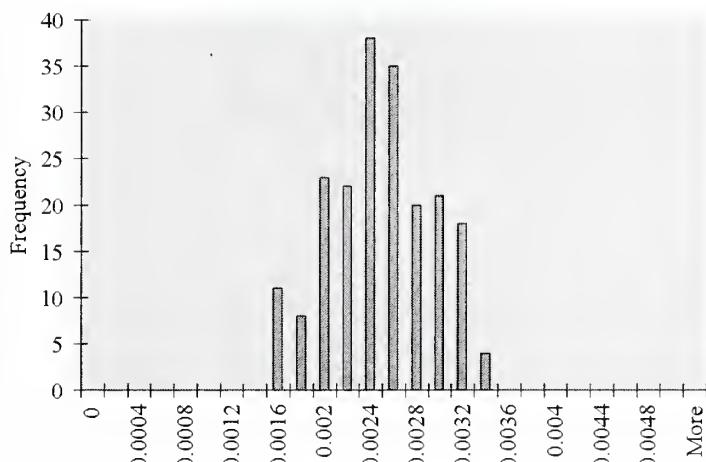
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



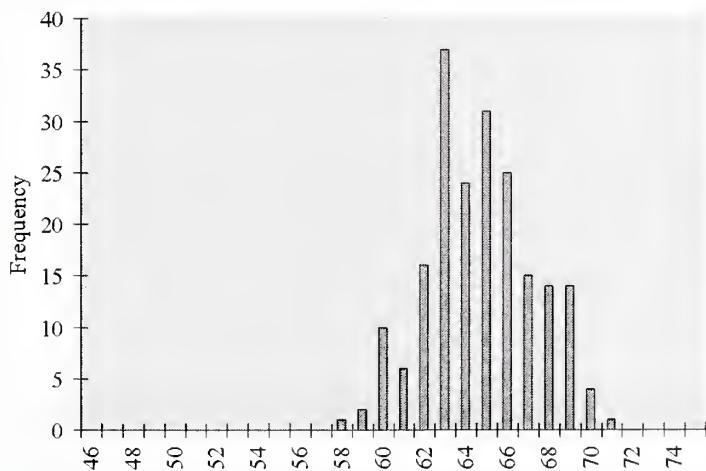
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2060
5	785000	3247
6	785000	4710
7	785000	6872
8	785000	8758
9	785000	10864
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



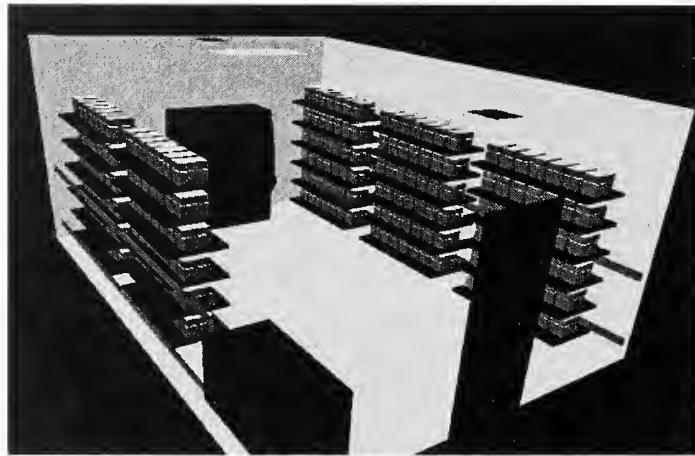
Casename

Case 78**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.09	71.76	1919	64.69%
S.D.	0.22	0.40	362	2.65%
Max.	22.67	72.81	2625	70.05%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.01	1.94	2.99	5.16	8.25	12.03	17.67	22.38	27.54	31.38
Max.	1.39	2.66	4.10	7.05	11.28	16.45	24.17	30.61	37.66	42.92

Room Breathing Zone

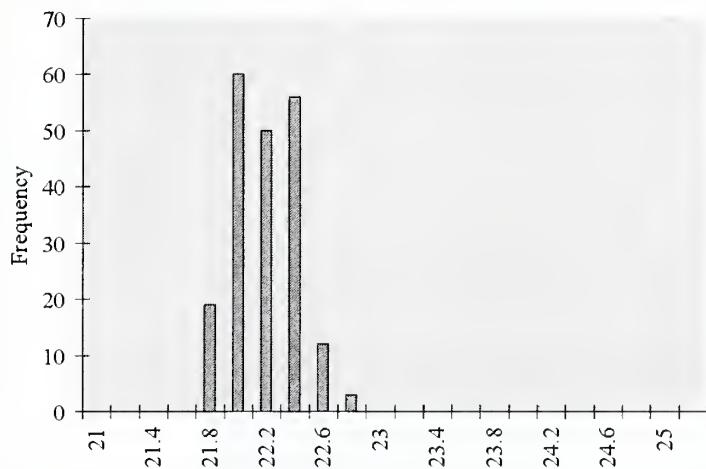
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.41	68.74	55	55.13%
S.D.	0.24	0.44	20	
Max.	22.13	71.84	212	

Room Breathing Zone NH₃ (ppm)

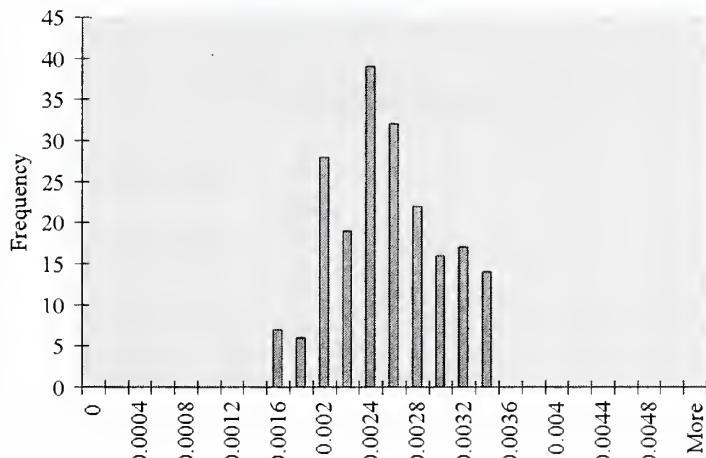
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.15	0.24	0.35	0.51	0.64	0.79	0.90
Max.	0.11	0.21	0.33	0.57	0.91	1.33	1.95	2.47	3.04	3.46

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

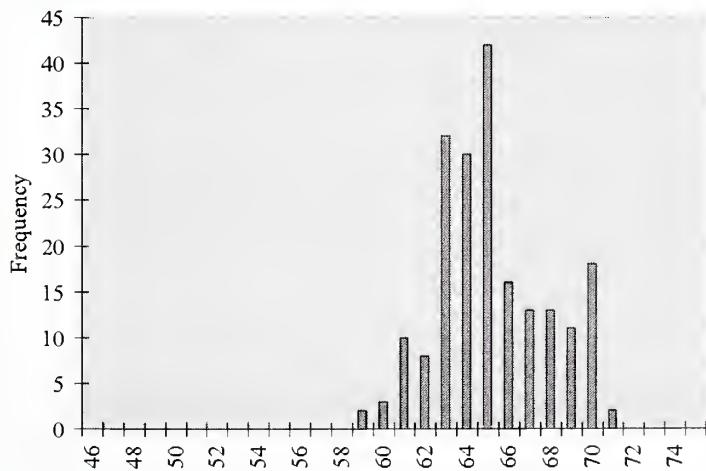


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	415
2	785000	795
3	785000	1225
4	785000	2109
5	785000	3373
6	785000	4919
7	785000	7229
8	785000	9154
9	785000	11263
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



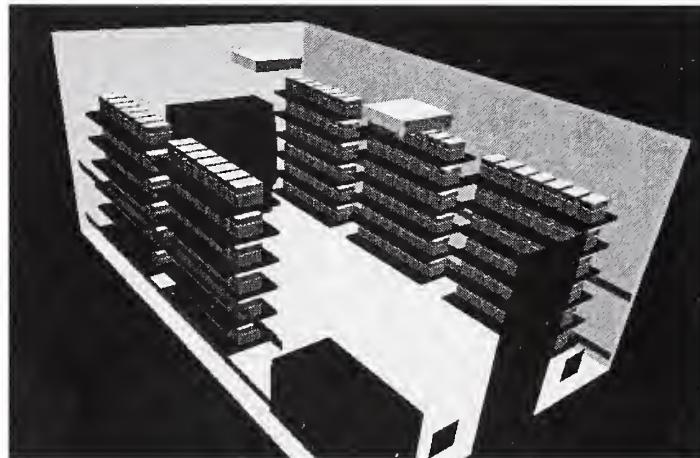
Casename

Case 79**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	2 Door exhausts	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.12	73.62	1647	58.59%
S.D.	0.37	0.66	301	2.52%
Max.	24.34	75.81	2355	63.76%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.86	1.67	2.57	3.70	5.21	7.22	9.88	13.33	17.71	23.15
Max.	1.22	2.38	3.67	5.30	7.45	10.33	14.13	19.07	25.32	33.10

Room Breathing Zone

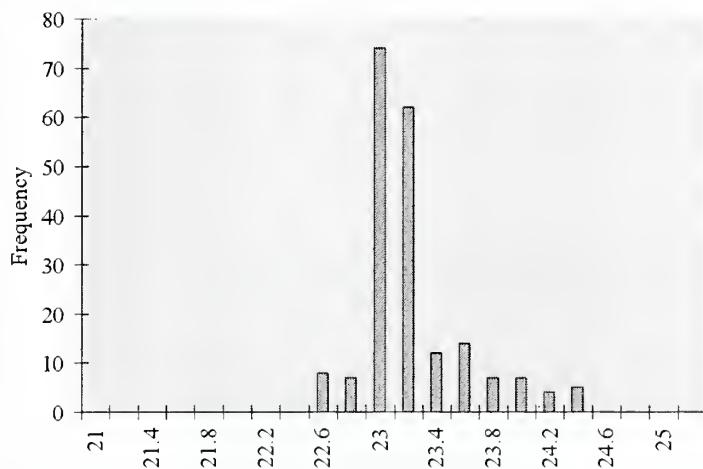
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.94	71.49	81	50.26%
S.D.	0.36	0.64	26	
Max.	22.89	73.20	195	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.08	0.13	0.18	0.26	0.36	0.49	0.66	0.87	1.14
Max.	0.10	0.20	0.30	0.44	0.62	0.86	1.17	1.58	2.10	2.74

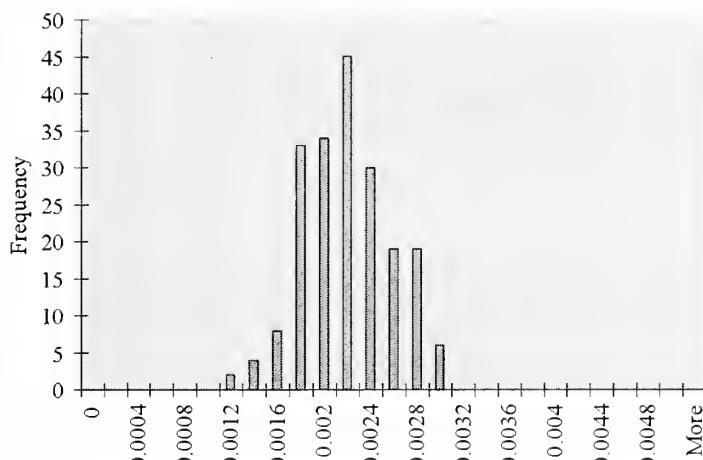
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



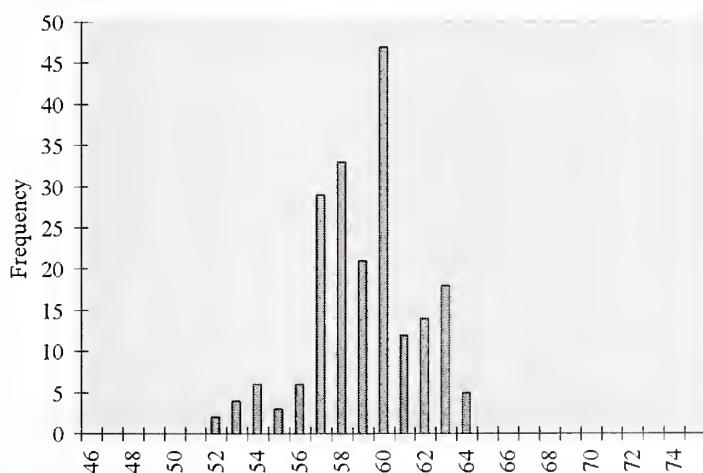
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors (kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

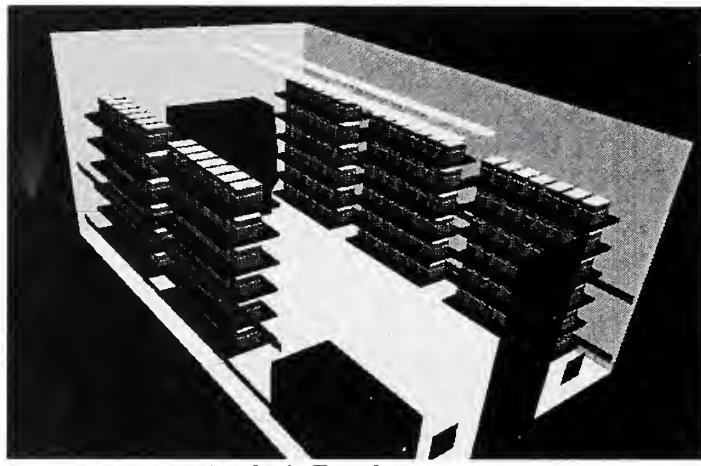


Casename

Case 80

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	2 Door exhausts	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
Room ACH 15					
Cage Condition Top On					



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.22	73.80	1707	58.68%
S.D.	0.44	0.79	311	2.60%
Max.	24.40	75.91	2688	64.90%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.89	1.73	2.66	3.84	5.40	7.49	10.24	13.82	18.35	23.99
Max.	1.40	2.72	4.19	6.05	8.50	11.79	16.14	21.77	28.91	37.79

Room Breathing Zone

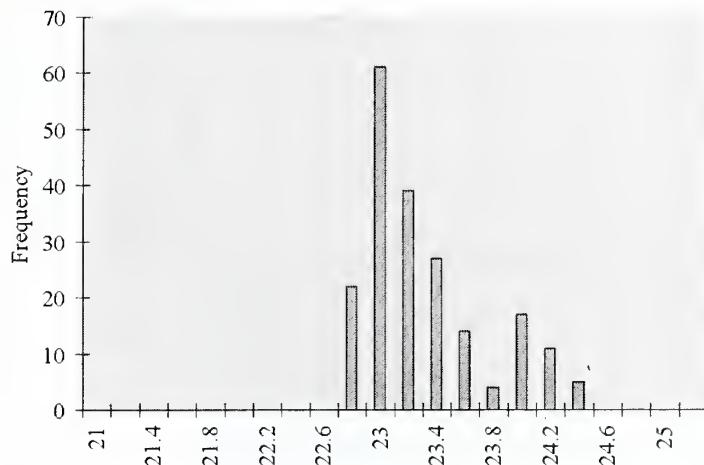
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.10	71.77	90	49.83%
S.D.	0.43	0.78	22	
Max.	23.07	73.52	207	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.09	0.14	0.20	0.29	0.40	0.54	0.73	0.97	1.27
Max.	0.11	0.21	0.32	0.47	0.65	0.91	1.24	1.68	2.23	2.91

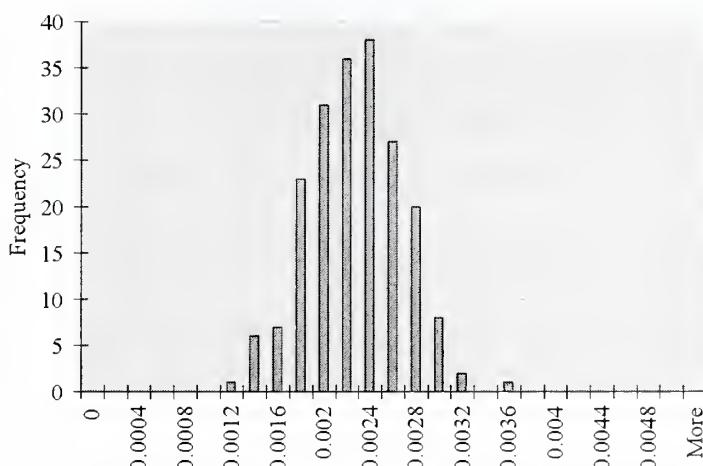
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



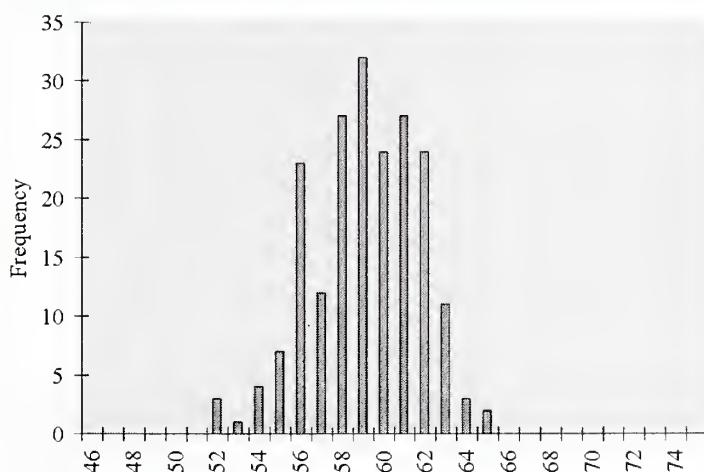
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



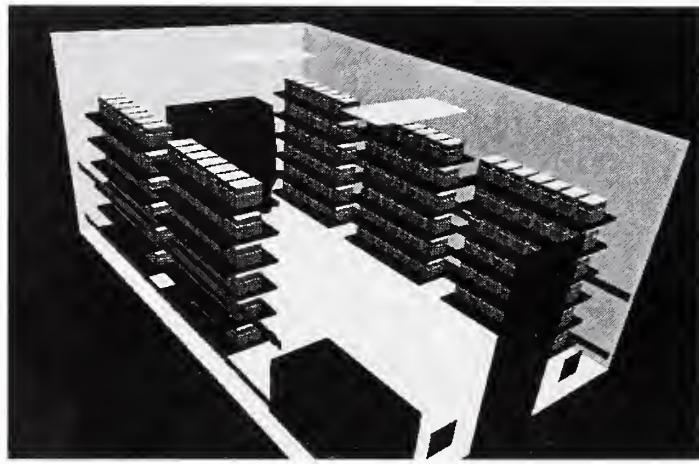
Casename

Case 81**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	2 Door exhausts	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm
On wall	Single	1050	21000 gr		

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.40	74.13	1741	58.28%
S.D.	0.48	0.86	293	2.45%
Max.	24.45	76.00	2720	63.62%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.76	2.72	3.92	5.51	7.64	10.45	14.10	18.72	24.47
Max.	1.41	2.75	4.24	6.12	8.60	11.93	16.33	22.03	29.25	38.24

Room Breathing Zone

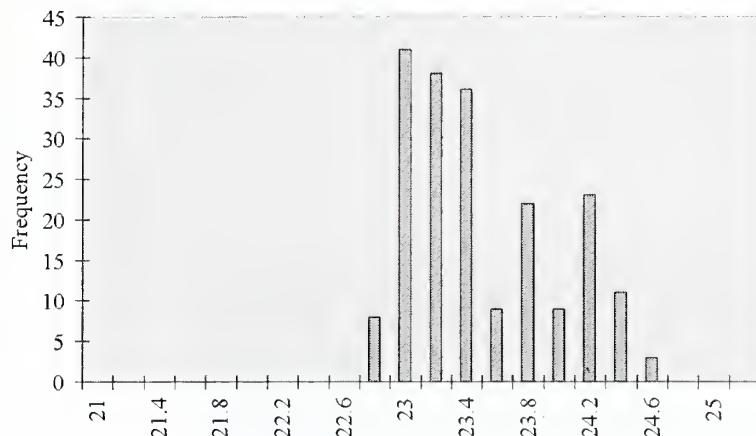
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.45	72.41	89	48.73%
S.D.	0.55	0.99	30	
Max.	23.36	74.05	278	

Room Breathing Zone NH3 (ppm)

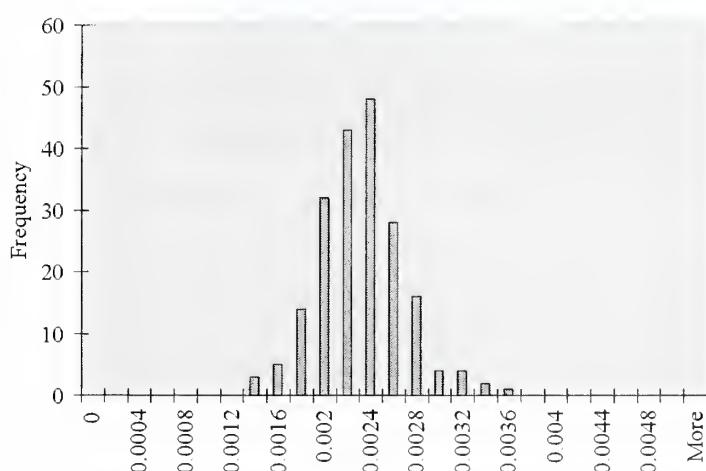
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.09	0.14	0.20	0.28	0.39	0.54	0.72	0.96	1.25
Max.	0.14	0.28	0.43	0.63	0.88	1.22	1.67	2.25	2.99	3.91

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



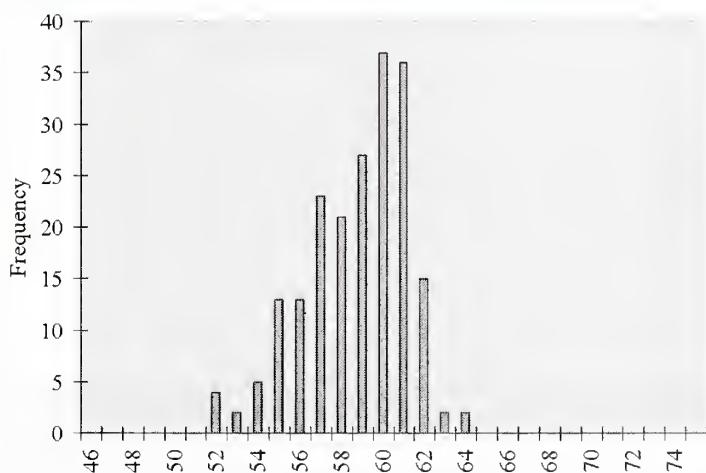
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

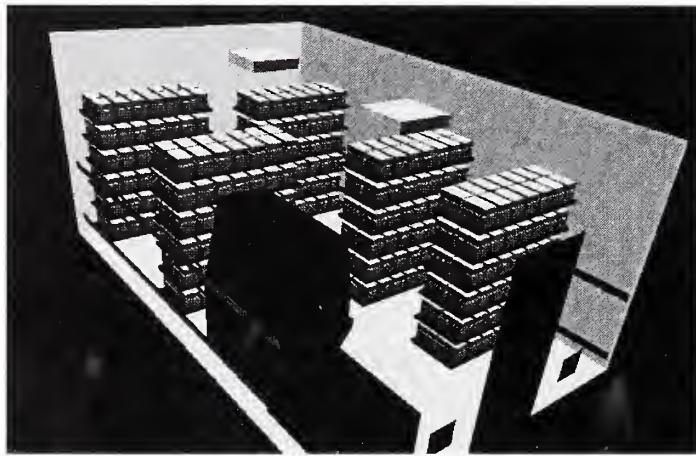
Cage occupied zone average relative humidity (%) distribution



Casename

Case 82**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	2 Door exhausts	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	On wall	Single	1050	21000 gr	neg 100cfm
Room ACH					
15					
Cage Condition					
Top On					

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.29	72.13	1667	61.88%
S.D.	0.53	0.96	419	3.59%
Max.	23.63	74.53	2794	68.39%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.87	1.69	2.60	3.92	5.72	8.06	11.28	14.91	19.35	24.34
Max.	1.46	2.83	4.36	6.58	9.59	13.51	18.91	25.00	32.45	40.81

Room Breathing Zone

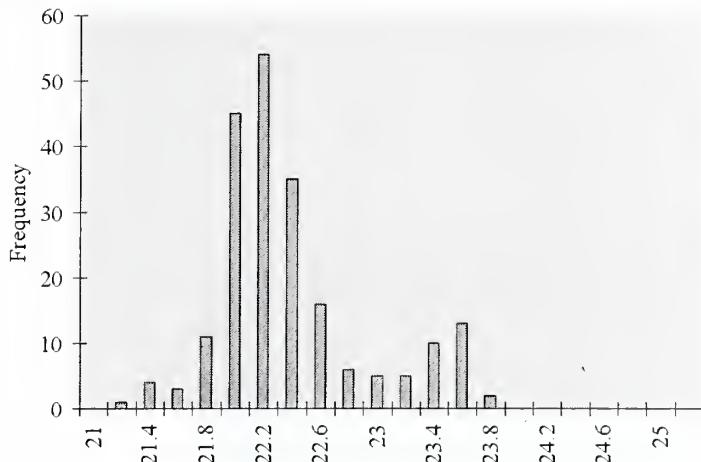
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.26	70.27	116	52.75%
S.D.	0.91	1.64	53	
Max.	27.19	80.94	332	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.12	0.18	0.27	0.40	0.56	0.79	1.04	1.35	1.70
Max.	0.17	0.34	0.52	0.78	1.14	1.61	2.25	2.97	3.86	4.86

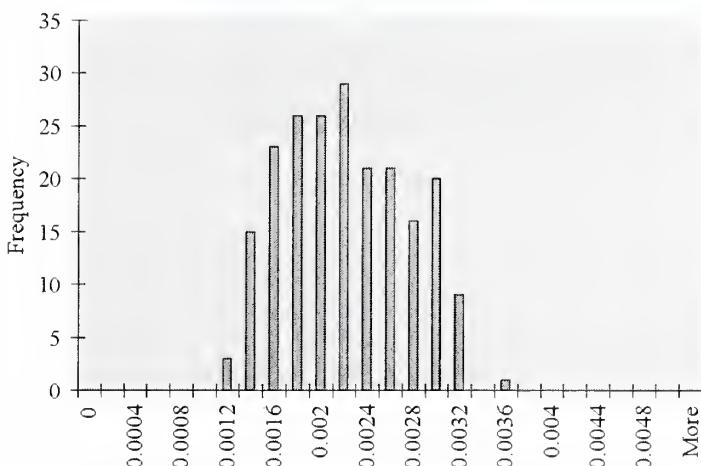
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



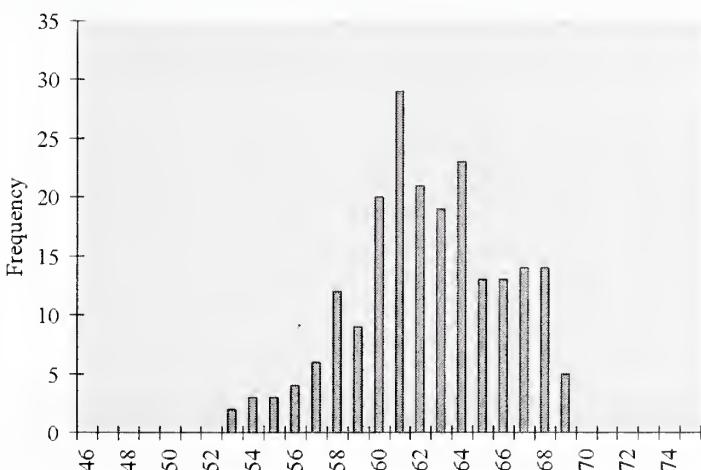
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	410
2	785000	795
3	785000	1225
4	785000	1848
5	785000	2695
6	785000	3795
7	785000	5313
8	785000	7024
9	785000	9115
10	785000	11384

Cage occupied zone average relative humidity (%) distribution

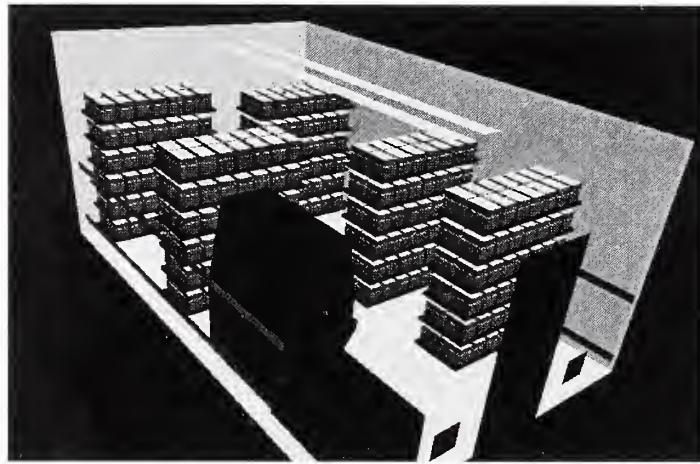


Casename

Case 83**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	17.5	66%	2 Door exhausts	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH 15

Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.20	71.97	1756	66.78%
S.D.	0.66	1.19	477	2.60%
Max.	23.55	74.39	3023	75.06%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.94	1.78	2.74	5.15	8.67	12.87	19.34	24.01	28.75	30.99
Max.	1.61	3.06	4.72	8.87	14.92	22.15	33.31	41.33	49.50	53.35

Room Breathing Zone

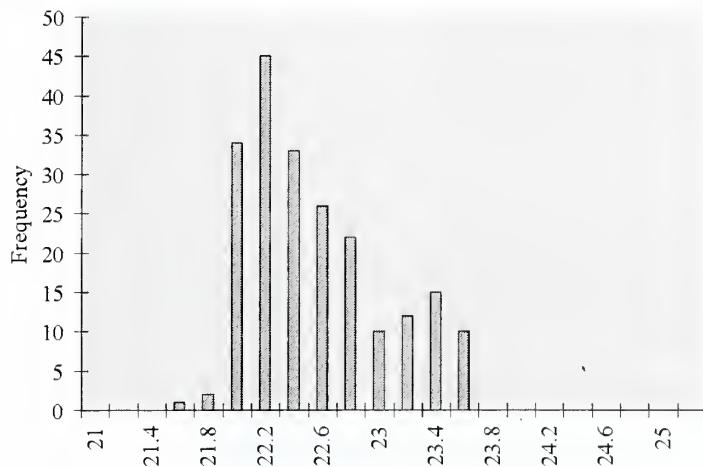
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.44	70.58	167	52.60%
S.D.	0.81	1.46	42	
Max.	26.98	80.56	403	

Room Breathing Zone NH3 (ppm)

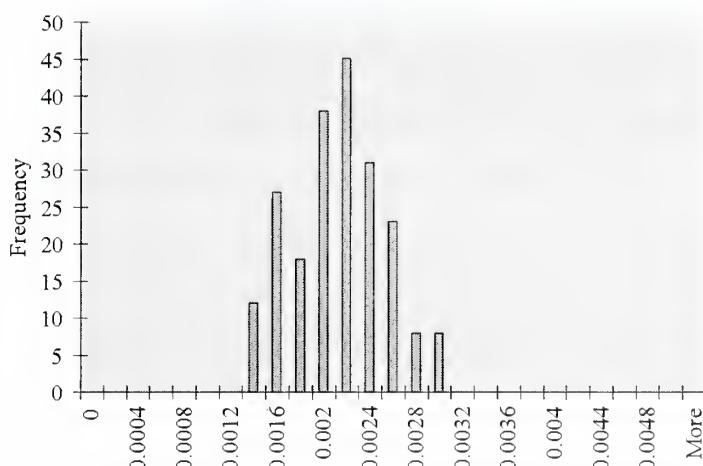
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.09	0.17	0.26	0.49	0.82	1.22	1.84	2.28	2.73	2.94
Max.	0.21	0.41	0.63	1.18	1.99	2.95	4.44	5.51	6.60	7.11

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



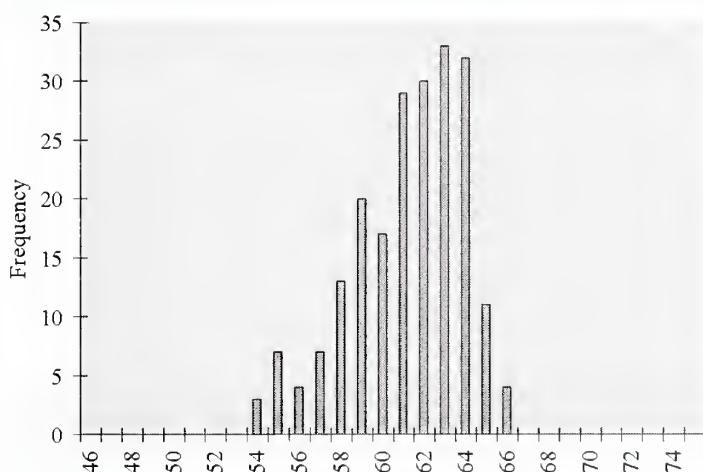
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	418
2	785000	795
3	785000	1225
4	785000	2303
5	785000	3876
6	785000	5752
7	785000	8650
8	785000	10734
9	785000	12856
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



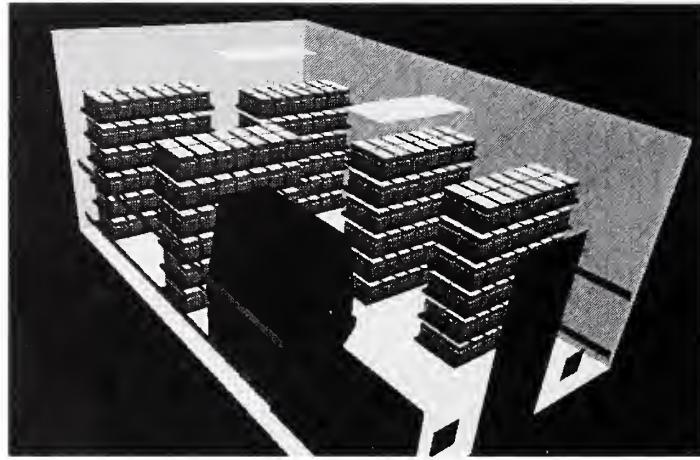
Casename

Case 84**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	17.5	66%	2 Door exhausts	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.48	72.46	1853	60.88%
S.D.	0.48	0.87	443	3.20%
Max.	23.73	74.71	2964	66.31%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.96	1.88	2.89	4.17	5.86	8.13	11.12	15.00	19.93	26.05
Max.	1.54	3.00	4.62	6.67	9.37	13.00	17.79	24.00	31.87	41.66

Room Breathing Zone

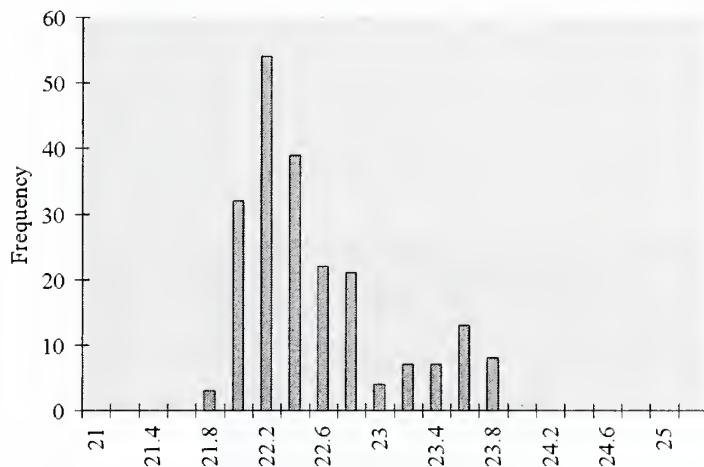
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.48	70.67	152	52.33%
S.D.	0.89	1.60	47	
Max.	26.19	79.14	380	

Room Breathing Zone NH3 (ppm)

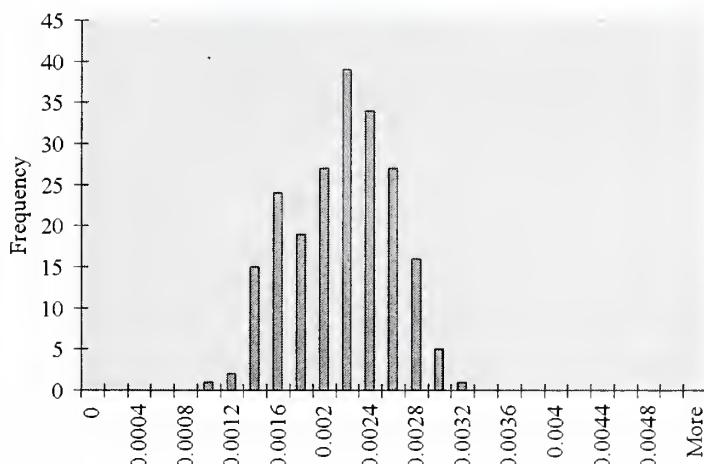
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.08	0.15	0.24	0.34	0.48	0.67	0.91	1.23	1.64	2.14
Max.	0.20	0.38	0.59	0.85	1.20	1.67	2.28	3.07	4.08	5.34

Histogram Distributions

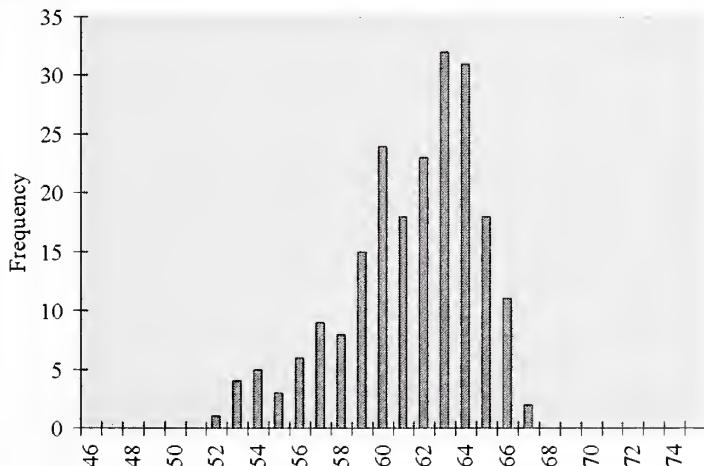
Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution



Cage occupied zone average relative humidity (%) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

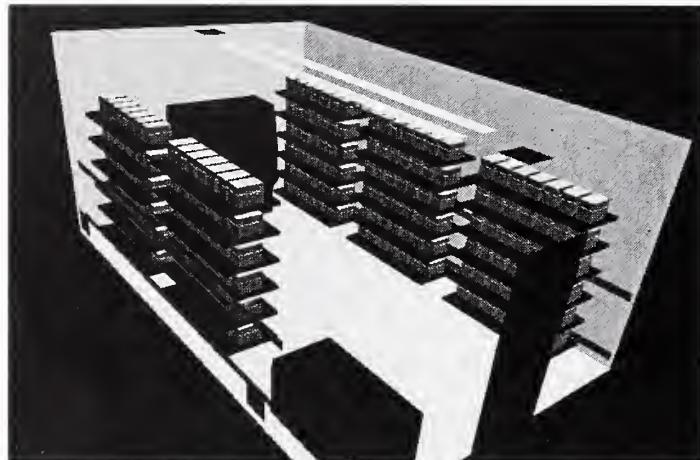
Cusename

Case 85**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	17.5	66%	Low	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	Perp	Double	2100	42000 gr	neg 100cfm

Room ACH
15

Cage Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.37	72.27	1930	62.82%
S.D.	0.31	0.57	425	2.86%
Max.	23.02	73.44	2840	68.68%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.01	1.95	3.01	4.76	7.19	10.26	14.64	19.02	24.18	29.32
Max.	1.49	2.87	4.43	7.00	10.57	15.09	21.54	27.99	35.58	43.14

Room Breathing Zone

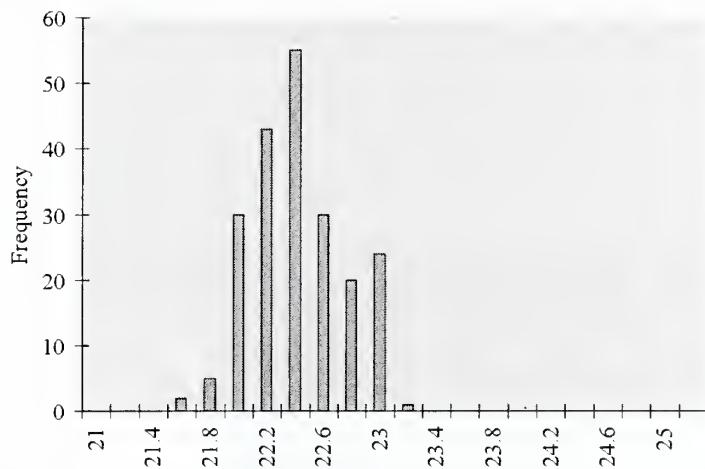
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.74	69.33	132	54.66%
S.D.	0.36	0.65	53	
Max.	21.49	70.68	445	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.07	0.13	0.21	0.33	0.49	0.70	1.00	1.30	1.65	2.00
Max.	0.23	0.45	0.69	1.10	1.66	2.36	3.37	4.38	5.57	6.75

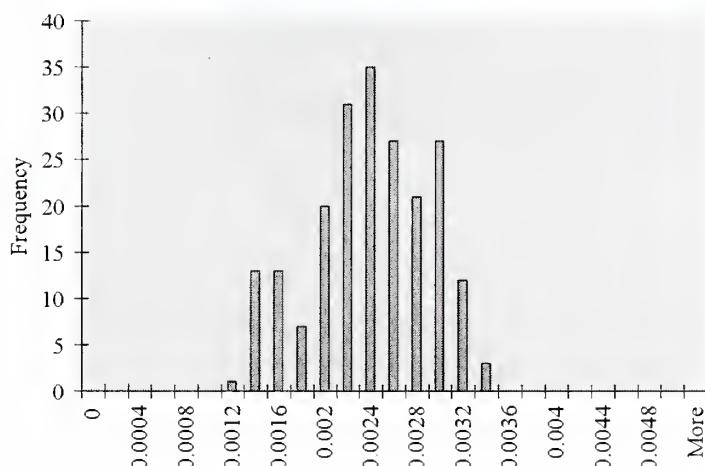
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



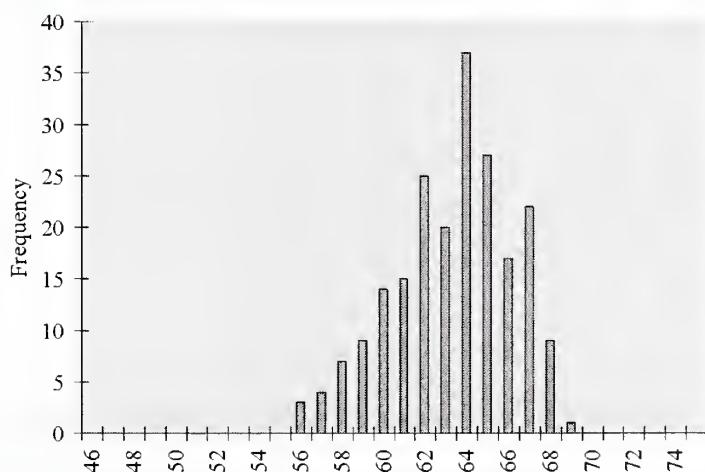
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1935
5	785000	2922
6	785000	4171
7	785000	5953
8	785000	7736
9	785000	9833
10	785000	11384

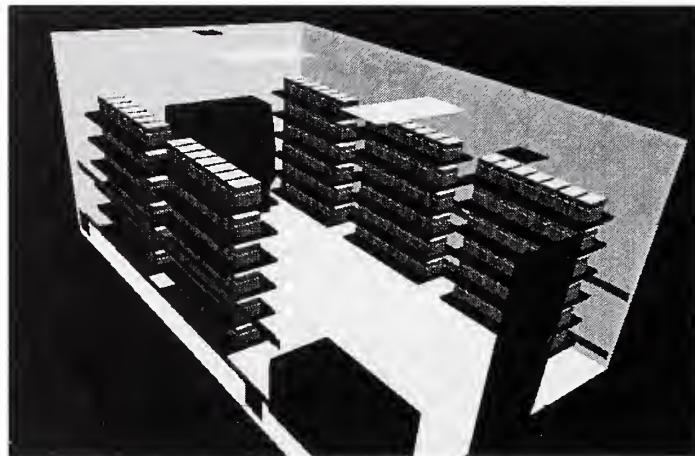
Cage occupied zone average relative humidity (%) distribution



Casename

Case 86**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	17.5	66%	Low	22	50%
Change Station ON alt design	Rack Orientation Perp	Rack Density Double	Number of Mice in Room 2100	Total mass of Mice in Room 42000 gr	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.30	72.13	1917	62.01%
S.D.	0.45	0.81	554	3.29%
Max.	23.25	73.84	3249	72.05%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.00	1.94	2.99	4.54	6.66	9.39	13.19	17.39	22.50	28.15
Max.	1.70	3.29	5.07	7.70	11.28	15.92	22.35	29.47	38.13	47.71

Room Breathing Zone

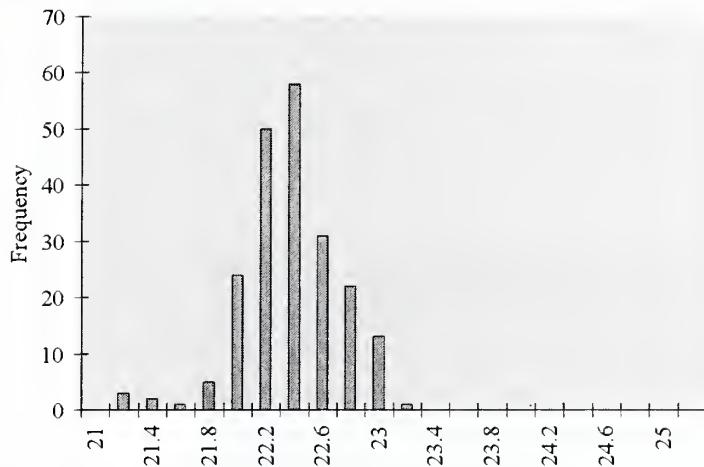
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.18	70.13	124	53.08%
S.D.	0.44	0.79	67	
Max.	22.27	72.08	374	

Room Breathing Zone NH3 (ppm)

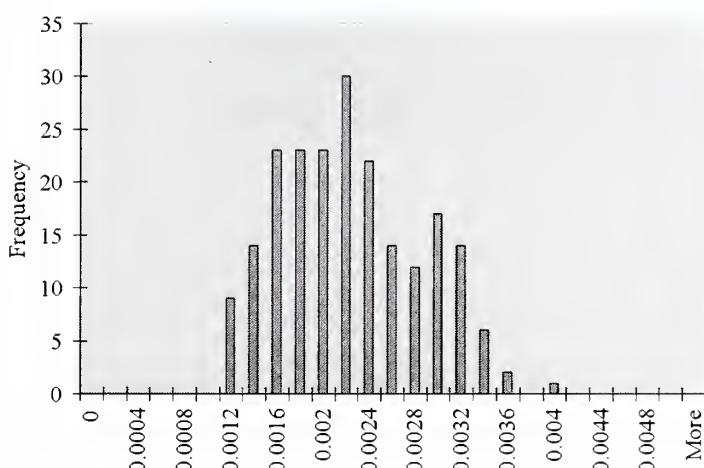
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.13	0.19	0.29	0.43	0.61	0.85	1.13	1.46	1.82
Max.	0.20	0.38	0.58	0.89	1.30	1.83	2.57	3.39	4.39	5.49

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



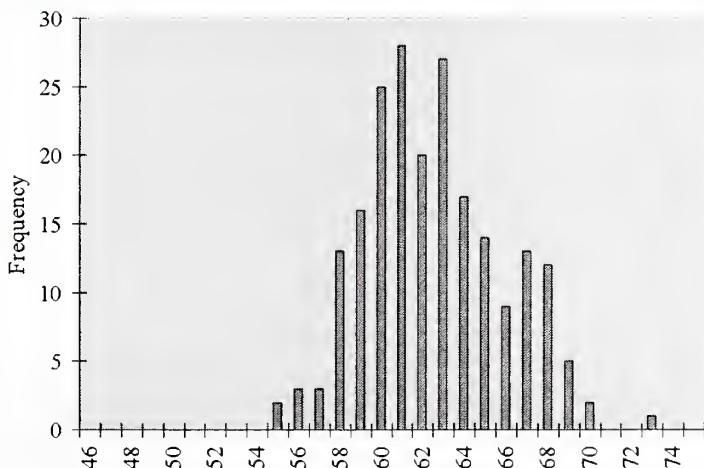
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	410
2	785000	795
3	785000	1225
4	785000	1859
5	785000	2726
6	785000	3846
7	785000	5400
8	785000	7121
9	785000	9213
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



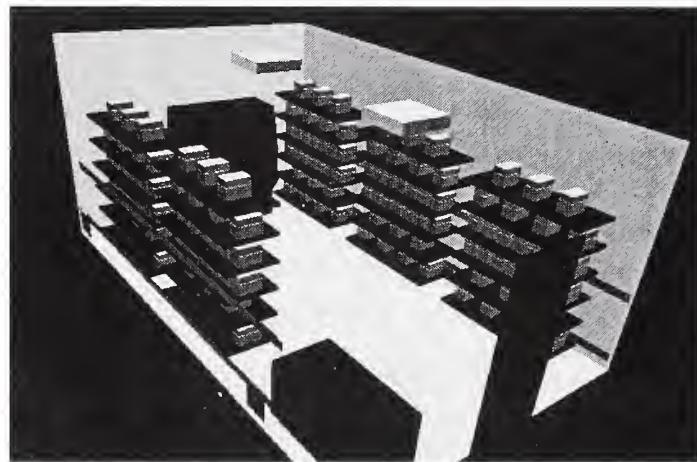
Casename

Case 87**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	19.2	59%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.65	72.77	1391	55.84%
S.D.	4.31	7.76	455	3.11%
Max.	24.56	76.21	2638	64.18%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.72	1.41	2.17	3.13	4.40	6.10	8.35	11.26	14.96	19.55
Max.	1.37	2.67	4.12	5.93	8.34	11.57	15.84	21.36	28.37	37.09

Room Breathing Zone

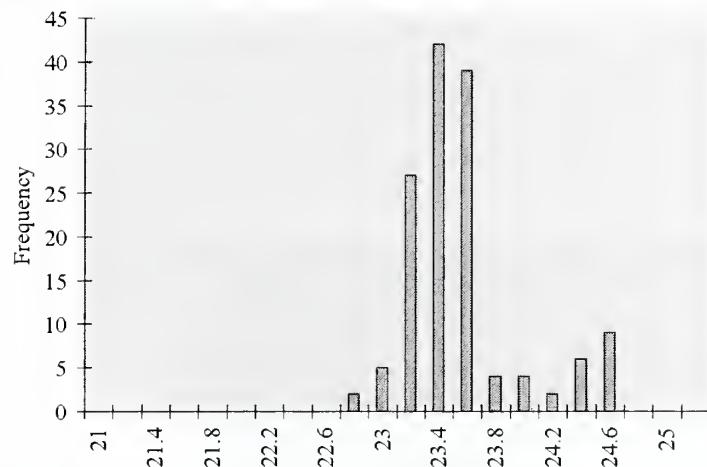
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.45	72.41	45	48.38%
S.D.	0.39	0.71	17	
Max.	23.63	74.53	134	

Room Breathing Zone NH3 (ppm)

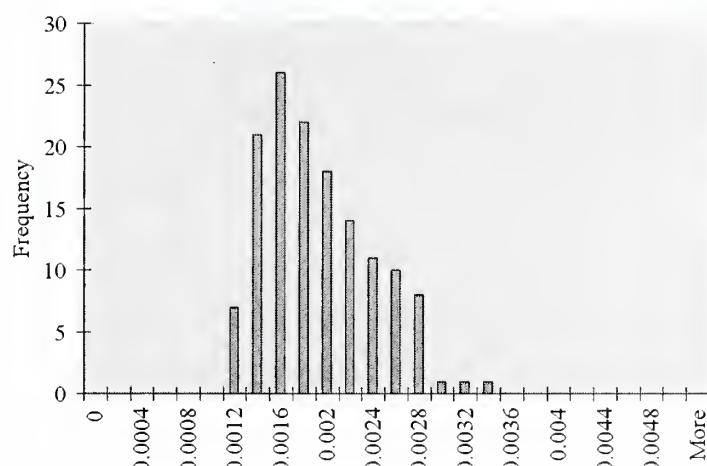
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.05	0.07	0.10	0.14	0.20	0.27	0.36	0.48	0.63
Max.	0.07	0.14	0.21	0.30	0.42	0.59	0.81	1.09	1.44	1.89

Histogram Distributions

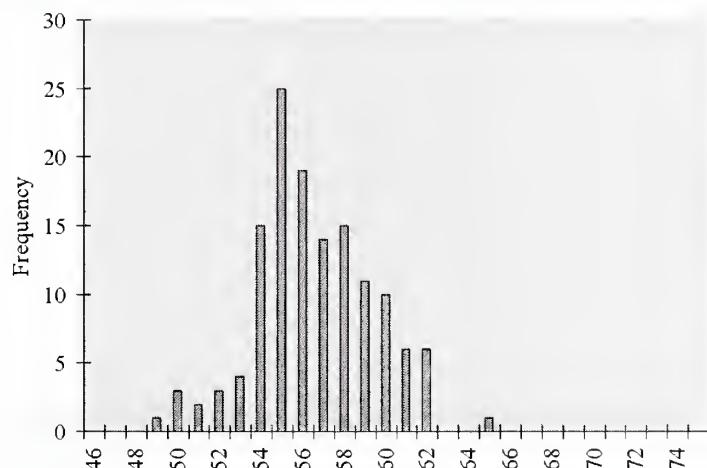
Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution



Cage occupied zone average relative humidity (%) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

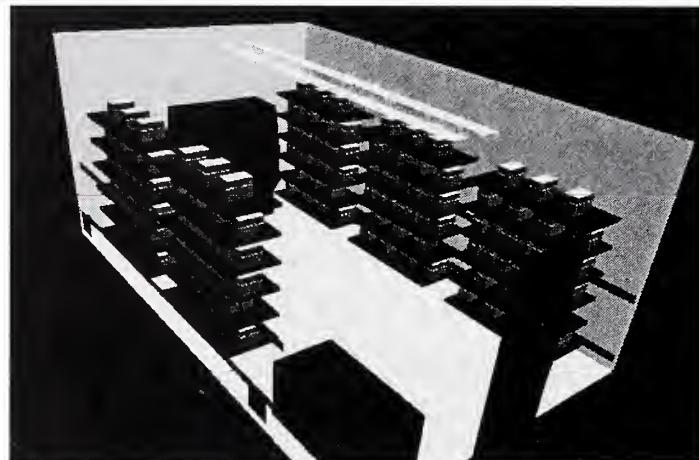
Casename

Case 88**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	19.2	59%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



a

Analysis Results**Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.55	74.39	1550	56.31%
S.D.	0.39	0.70	378	2.71%
Max.	24.53	76.16	2516	63.30%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.81	1.57	2.42	3.49	4.90	6.80	9.30	12.55	16.67	21.78
Max.	1.31	2.55	3.93	5.66	7.96	11.04	15.10	20.37	27.06	35.37

Room Breathing Zone

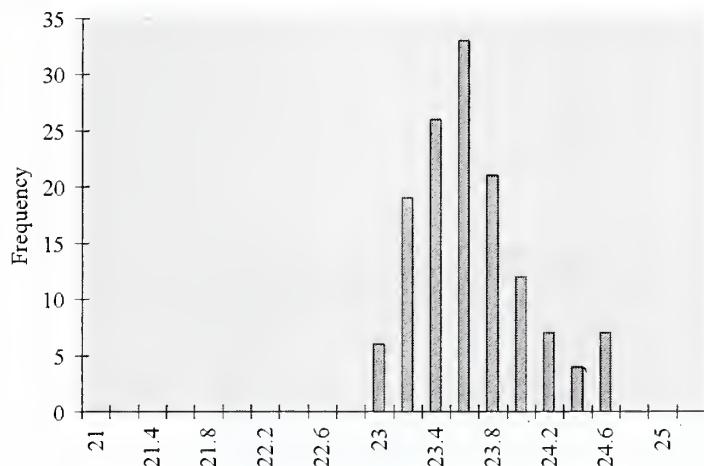
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.56	72.61	48	48.07%
S.D.	0.44	0.79	11	
Max.	23.62	74.52	86	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.05	0.07	0.11	0.15	0.21	0.29	0.39	0.51	0.67
Max.	0.04	0.09	0.13	0.19	0.27	0.38	0.51	0.69	0.92	1.21

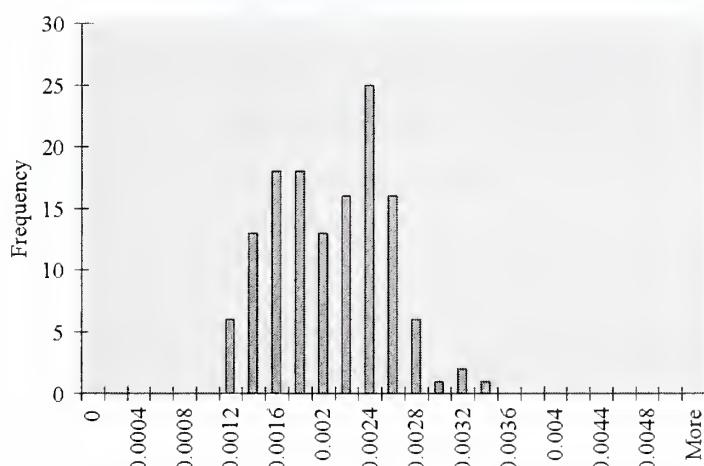
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



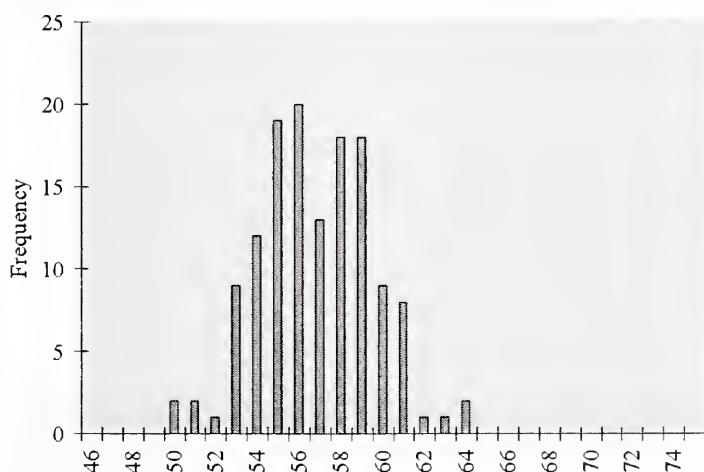
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

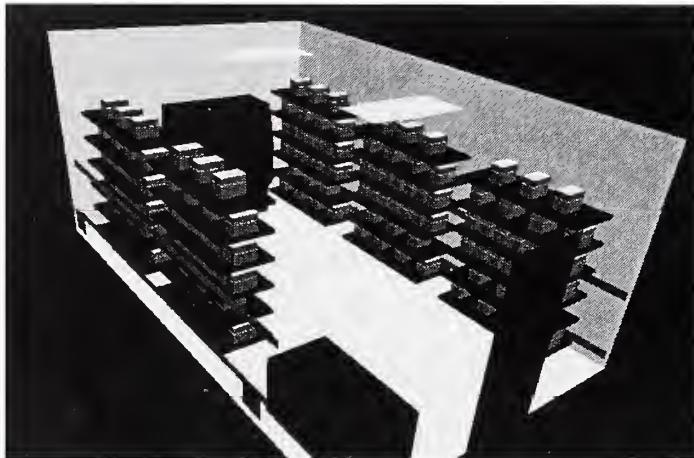
Cage occupied zone average relative humidity (%) distribution



Casename

Case 89**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	19.2	59%	Low	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.68	74.62	1636	56.53%
S.D.	0.44	0.80	374	3.10%
Max.	24.92	76.86	2599	63.57%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.85	1.66	2.55	3.68	5.17	7.17	9.82	13.25	17.59	23.00
Max.	1.35	2.63	4.05	5.85	8.22	11.40	15.60	21.04	27.95	36.53

Room Breathing Zone

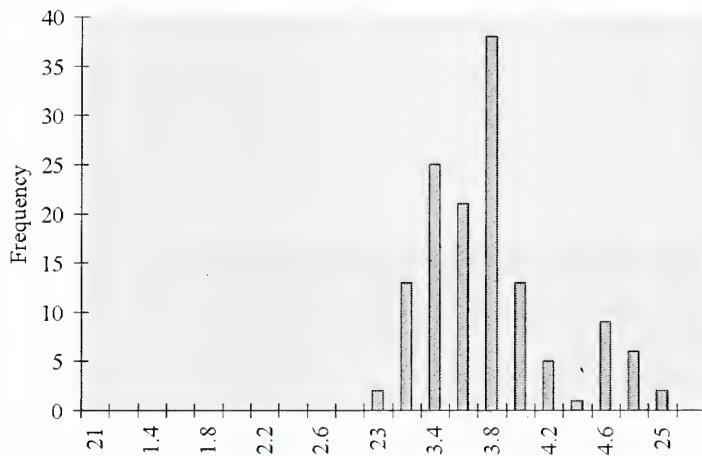
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	22.92	73.26	62	47.10%
S.D.	0.55	1.00	21	
Max.	24.09	75.36	217	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.10	0.14	0.20	0.27	0.37	0.50	0.67	0.87
Max.	0.11	0.22	0.34	0.49	0.69	0.95	1.30	1.75	2.33	3.04

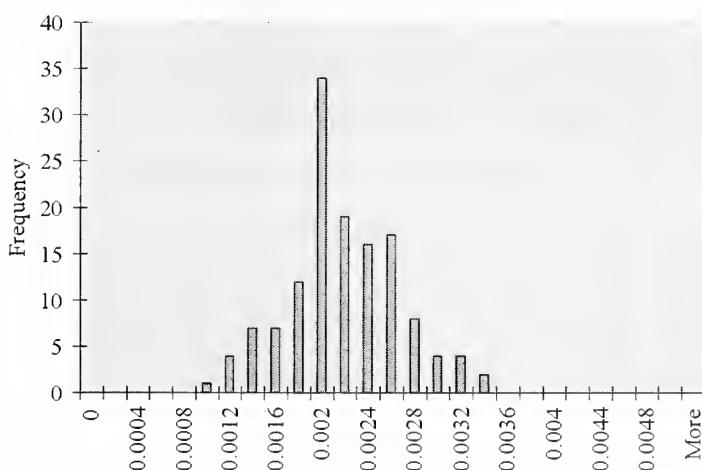
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



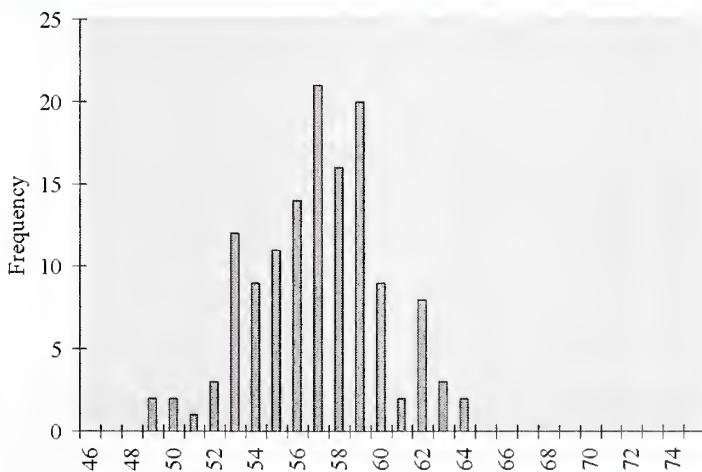
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

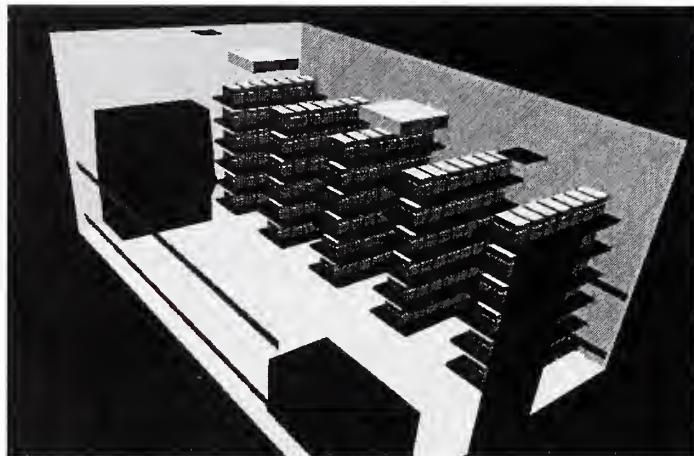
Cage occupied zone average relative humidity (%) distribution



Casename

Case 90**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp all 5 on 1 wall	Single	1050	21000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.93	71.47	1673	63.32%
S.D.	0.29	0.52	385	2.63%
Max.	22.36	72.24	2511	69.19%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.88	1.69	2.61	4.22	6.48	9.32	13.41	17.29	21.77	25.93
Max.	1.32	2.54	3.92	6.34	9.73	13.98	20.13	25.96	32.68	38.92

Room Breathing Zone

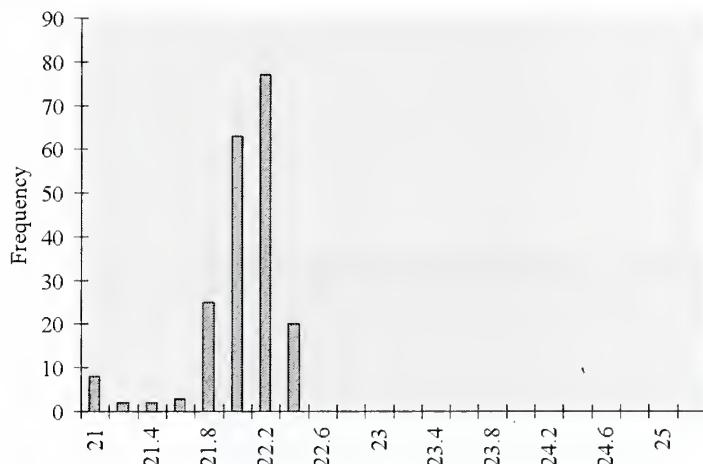
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.38	68.69	72	55.37%
S.D.	0.23	0.41	29	
Max.	21.75	71.15	279	

Room Breathing Zone NH3 (ppm)

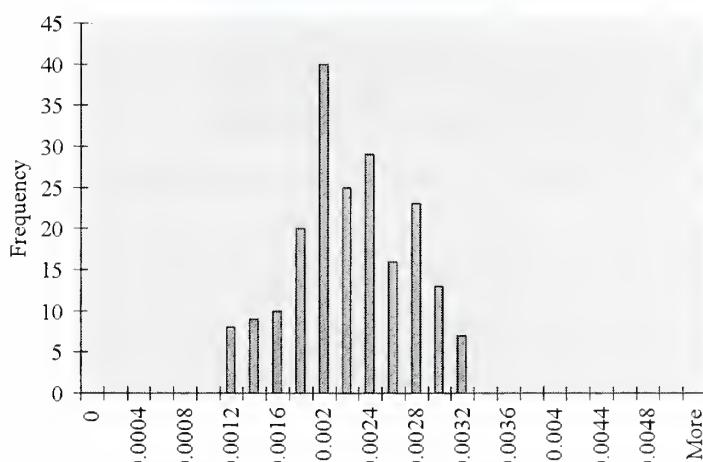
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.18	0.28	0.40	0.57	0.74	0.93	1.11
Max.	0.15	0.28	0.44	0.70	1.08	1.55	2.24	2.89	3.63	4.33

Histogram Distributions

Cage occupied zone average temperature (°C) distribution

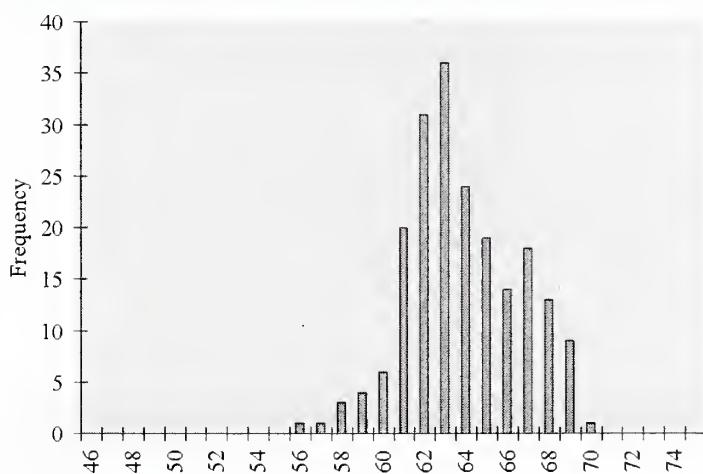


Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	412
2	785000	795
3	785000	1225
4	785000	1982
5	785000	3043
6	785000	4371
7	785000	6295
8	785000	8116
9	785000	10216
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



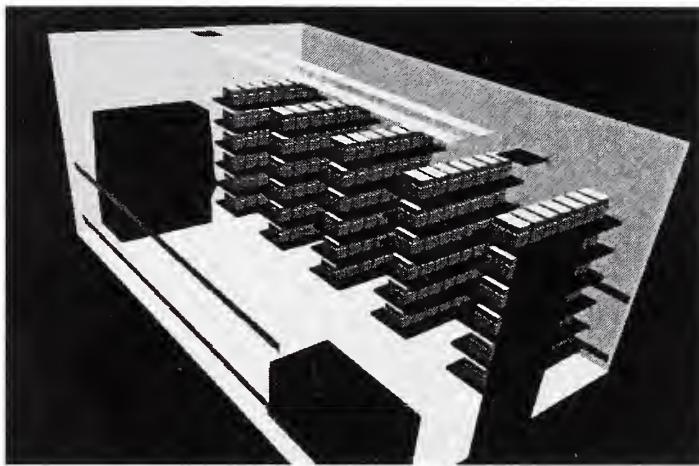
Casename

Case 91**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp all 5 on 1 wall	Single	1050	21000 gr	neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.99	71.58	1709	63.38%
S.D.	0.30	0.54	381	2.49%
Max.	22.59	72.67	2643	69.86%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.90	1.73	2.67	4.33	6.65	9.57	13.79	17.76	22.33	26.55
Max.	1.39	2.68	4.12	6.69	10.29	14.79	21.32	27.47	34.54	41.07

Room Breathing Zone

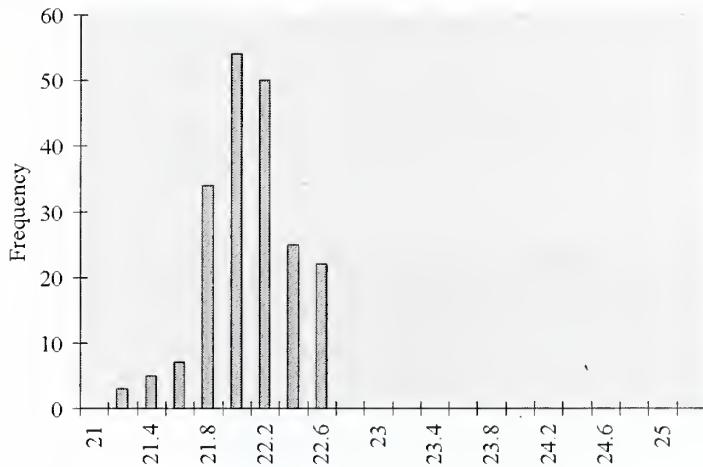
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.46	68.83	57	54.97%
S.D.	0.25	0.44	19	
Max.	21.66	70.99	183	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.03	0.06	0.09	0.14	0.22	0.32	0.46	0.59	0.75	0.89
Max.	0.10	0.19	0.29	0.46	0.71	1.03	1.48	1.90	2.39	2.85

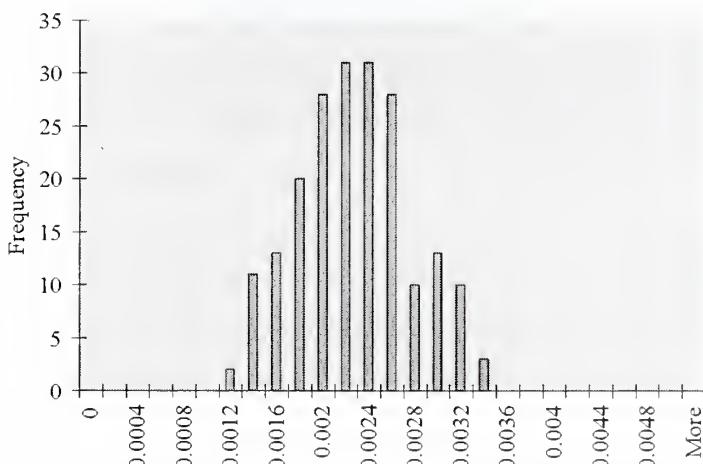
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



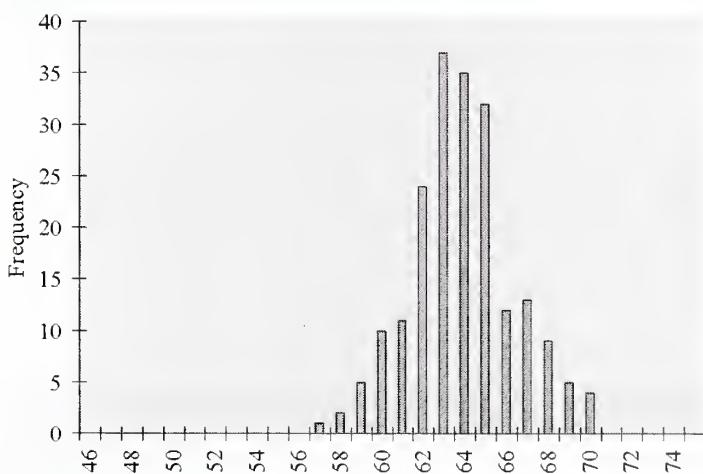
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	412
2	785000	795
3	785000	1225
4	785000	1987
5	785000	3056
6	785000	4394
7	785000	6333
8	785000	8158
9	785000	10259
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



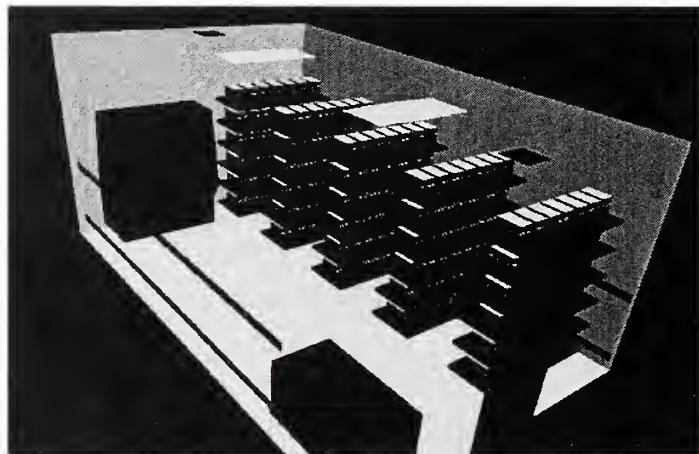
Casename

Case 92**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	18.8	61%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
	Perp all 5 on 1 wall	Single	1050	21000 gr	neg 100cfm

Room ACH 15

Cage Condition Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.98	71.56	1631	62.80%
S.D.	0.31	0.56	314	2.29%
Max.	22.58	72.65	2404	69.73%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.86	1.65	2.55	4.02	6.06	8.65	12.33	16.04	20.39	24.75
Max.	1.26	2.43	3.75	5.92	8.93	12.74	18.18	23.63	30.06	36.48

Room Breathing Zone

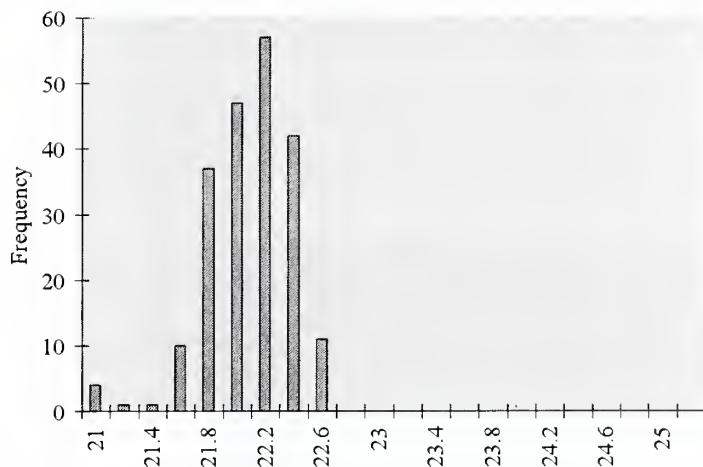
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.40	68.71	41	55.05%
S.D.	0.17	0.30	15	
Max.	20.95	69.70	151	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.10	0.15	0.22	0.31	0.41	0.52	0.63
Max.	0.08	0.15	0.24	0.37	0.56	0.80	1.14	1.48	1.88	2.29

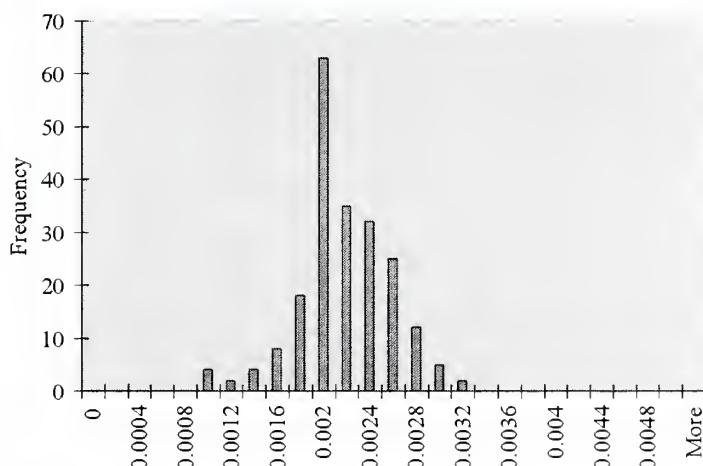
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



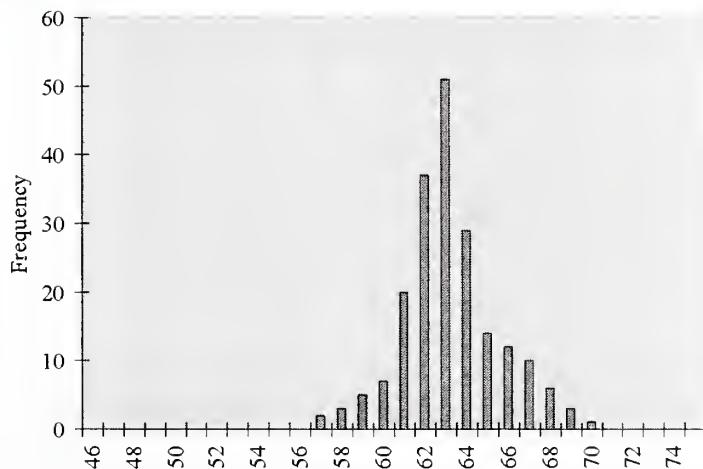
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	411
2	785000	795
3	785000	1225
4	785000	1933
5	785000	2916
6	785000	4161
7	785000	5936
8	785000	7716
9	785000	9814
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

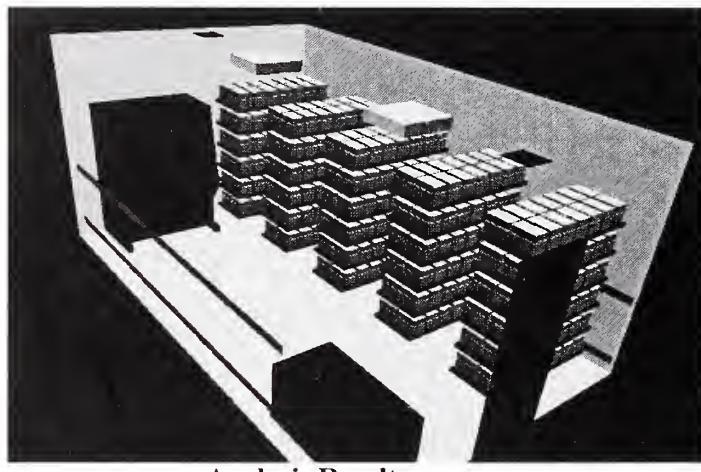
Case 93

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	17.5	66%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.94	71.49	1822	65.04%
S.D.	0.37	0.66	402	2.43%
Max.	22.66	72.79	2780	69.72%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.96	1.84	2.84	4.97	8.02	11.74	17.32	21.85	26.75	30.18
Max.	1.47	2.81	4.34	7.58	12.24	17.91	26.44	33.35	40.83	46.07

Room Breathing Zone

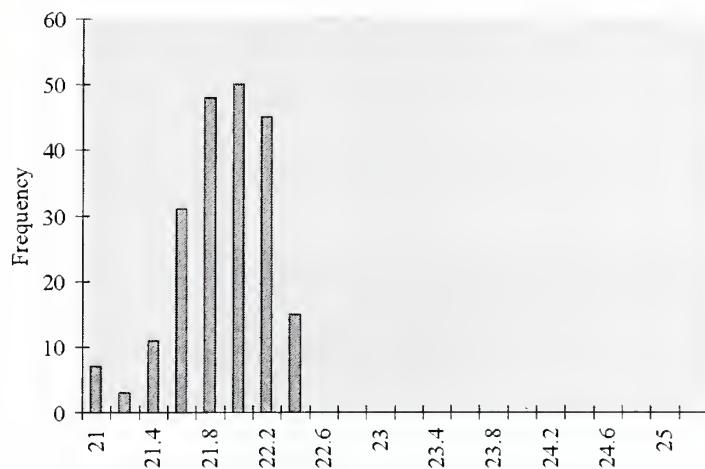
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.26	68.47	86	55.93%
S.D.	0.52	0.94	399	
Max.	30.00	86.00	361	

Room Breathing Zone NH₃ (ppm)

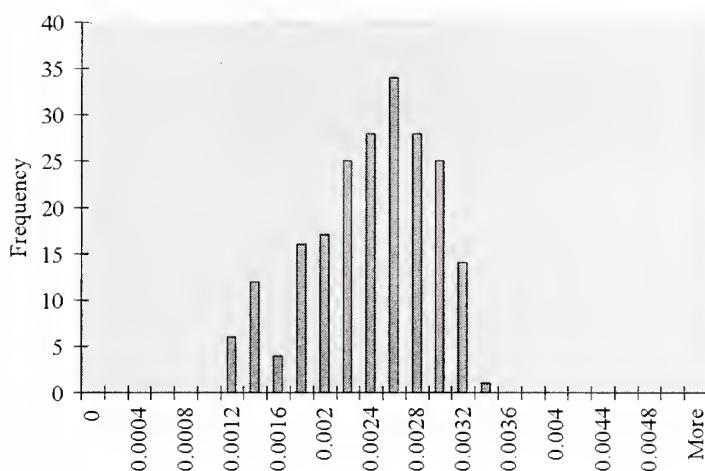
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.09	0.13	0.24	0.38	0.56	0.82	1.04	1.27	1.43
Max.	0.19	0.37	0.56	0.98	1.59	2.33	3.43	4.33	5.30	5.98

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



Cage occupied zone average contamination (kg/kg) distribution



Casename

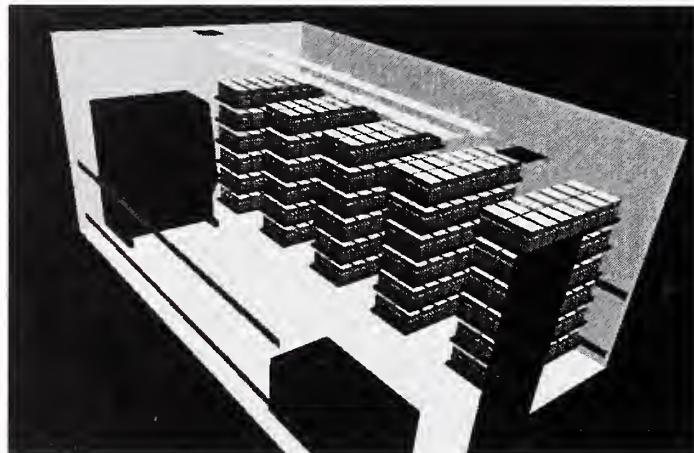
Case 94

Description

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	17.5	66%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH 15

Cage Condition Top On



Analysis Results

Cage Occupied Zone

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.85	71.34	1757	64.38%
S.D.	0.39	0.71	395	2.10%
Max.	22.72	72.89	2734	69.23%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.93	1.78	2.74	4.66	7.38	10.73	15.71	19.97	24.68	28.40
Max.	1.44	2.77	4.27	7.24	11.49	16.70	24.44	31.06	38.40	44.18

Room Breathing Zone

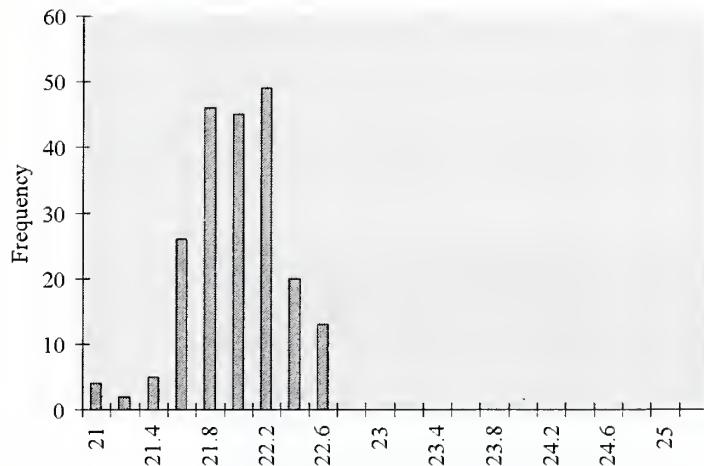
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.23	68.41	117	56.34%
S.D.	0.26	0.46	36	
Max.	20.69	69.24	328	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.12	0.18	0.31	0.49	0.71	1.04	1.33	1.64	1.89
Max.	0.17	0.33	0.51	0.87	1.38	2.01	2.94	3.73	4.61	5.31

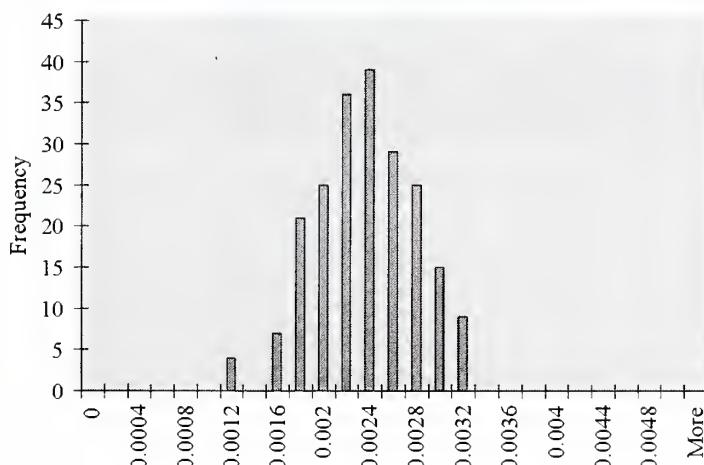
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



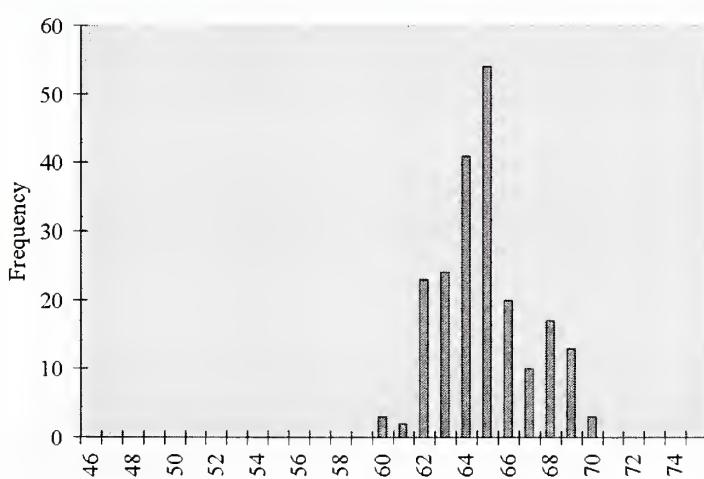
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Cage occupied zone average relative humidity (%) distribution

Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2080
5	785000	3299
6	785000	4795
7	785000	7017
8	785000	8919
9	785000	11026
10	785000	11384



Casename

Case 95**Description**

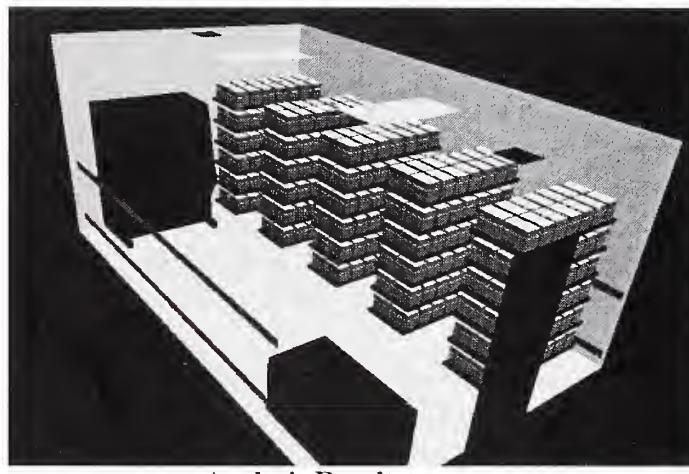
Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	17.5	66%	Ceiling	22	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Perp all 5 on 1 wall

Double

2100

42000 gr

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.94	71.49	1822	64.10%
S.D.	0.37	0.66	402	2.75%
Max.	22.66	72.79	2780	70.20%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.96	1.84	2.84	4.77	7.50	10.87	15.84	20.21	25.09	29.12
Max.	1.47	2.81	4.34	7.28	11.44	16.59	24.18	30.84	38.30	44.45

Room Breathing Zone

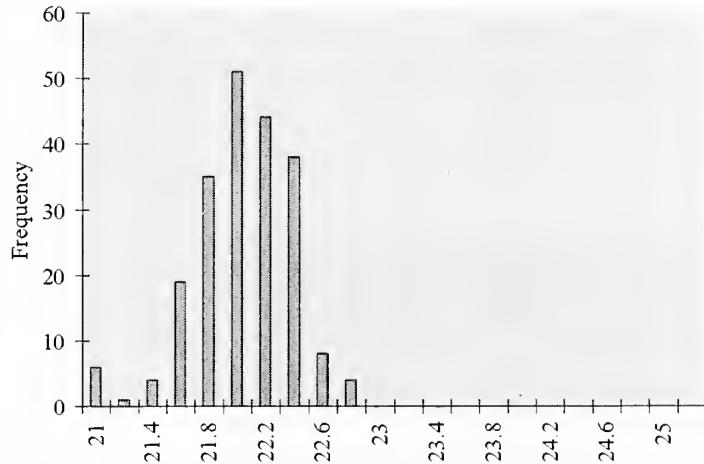
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.23	68.42	69	55.88%
S.D.	0.25	0.45	34	
Max.	20.79	69.42	281	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.07	0.11	0.18	0.29	0.41	0.60	0.77	0.96	1.11
Max.	0.15	0.28	0.44	0.74	1.16	1.68	2.44	3.12	3.87	4.49

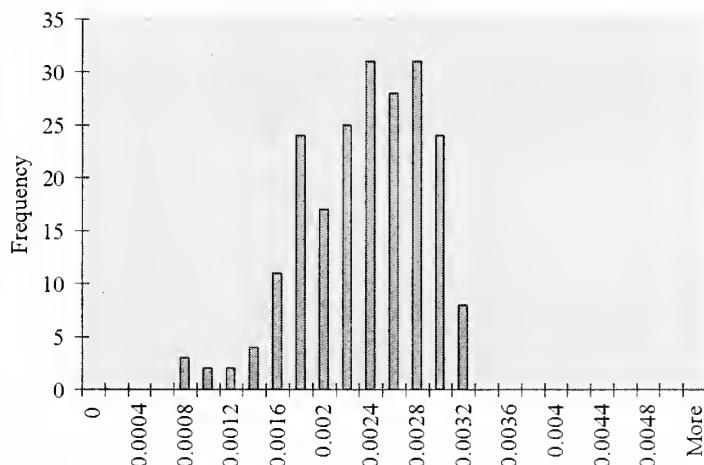
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



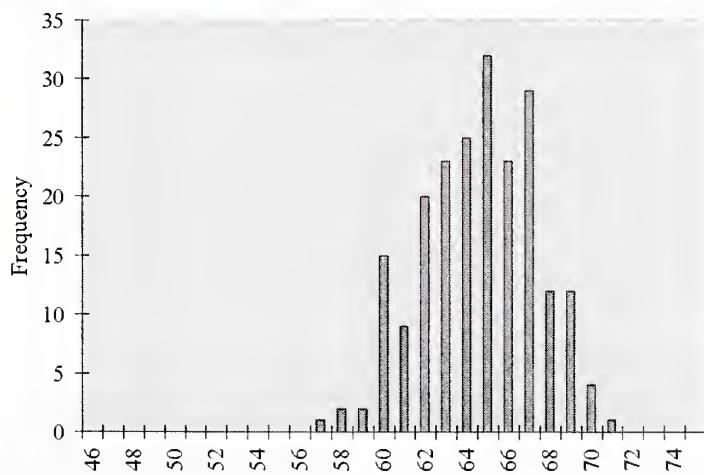
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2054
5	785000	3231
6	785000	4684
7	785000	6827
8	785000	8708
9	785000	10814
10	785000	11384

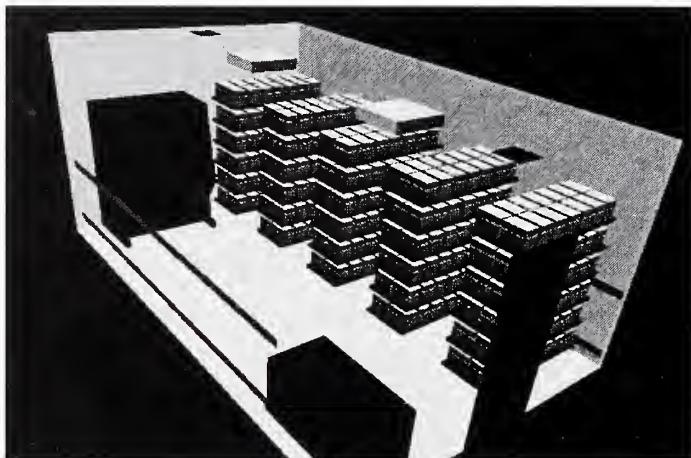
Cage occupied zone average relative humidity (%) distribution



Casename

Case 96**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	17.5	66%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	Perp all 5 on 1 wall	Double	2100	42000 gr	neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.76	71.17	1957	65.79%
S.D.	0.34	0.61	459	2.90%
Max.	22.32	72.17	2763	71.27%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.04	1.98	3.05	5.51	9.06	13.35	19.87	24.88	30.15	33.32
Max.	1.47	2.80	4.31	7.78	12.80	18.85	28.06	35.12	42.57	47.05

Room Breathing Zone

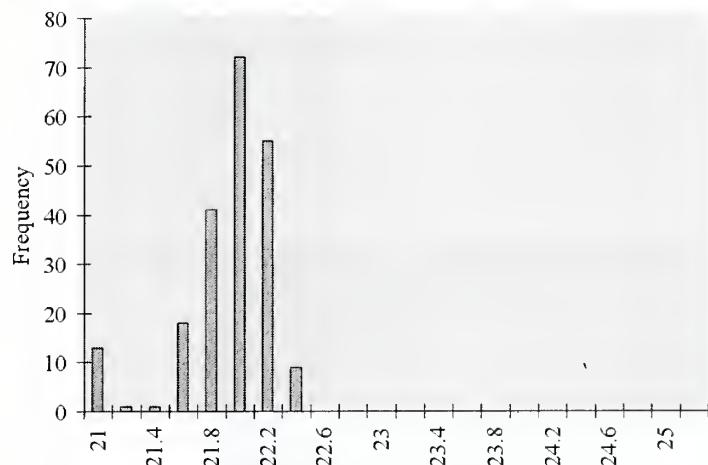
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.01	68.02	100	56.95%
S.D.	0.27	0.48	41	
Max.	20.70	69.26	280	

Room Breathing Zone NH₃ (ppm)

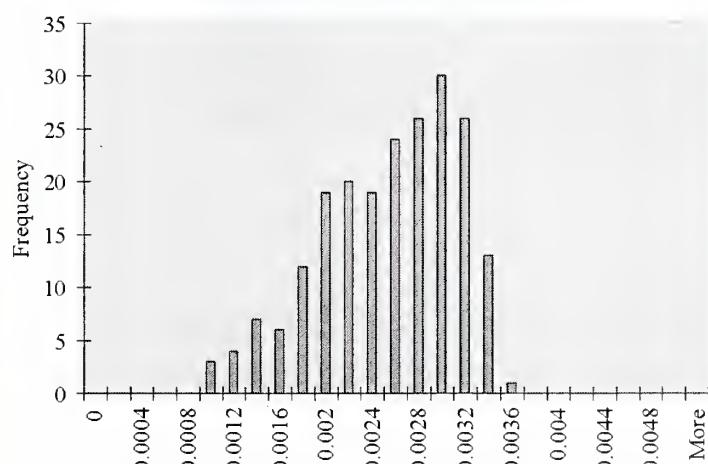
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.05	0.10	0.16	0.28	0.46	0.68	1.01	1.27	1.54	1.70
Max.	0.15	0.28	0.44	0.79	1.30	1.91	2.85	3.56	4.32	4.77

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



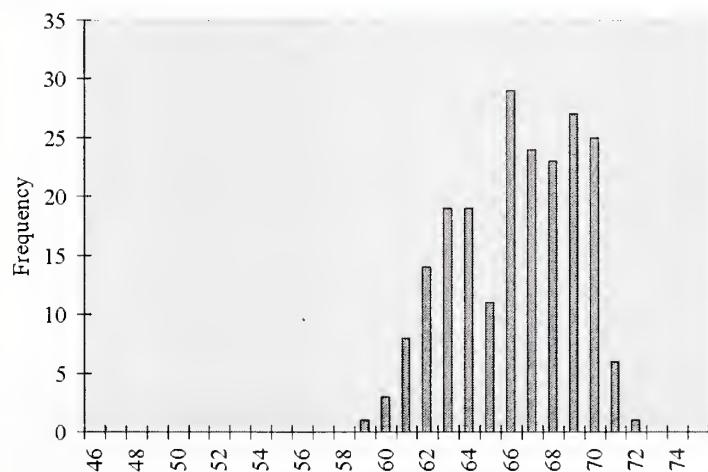
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	417
2	785000	795
3	785000	1225
4	785000	2210
5	785000	3636
6	785000	5355
7	785000	7972
8	785000	9981
9	785000	12097
10	785000	11384

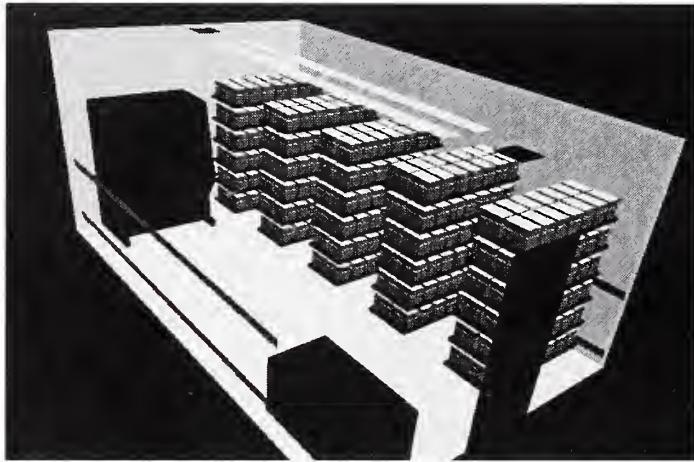
Cage occupied zone average relative humidity (%) distribution



Casename

Case 97**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Slot	17.5	66%	Ceiling	22	50%
Change Station	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation
ON alt design	Perp all 5 on 1 wall	Double	2100	42000 gr	neg 100cfm

Room
ACH
15Cage
Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.65	70.97	1725	64.22%
S.D.	0.32	0.58	427	2.16%
Max.	22.29	72.12	2885	69.99%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.91	1.75	2.69	4.54	7.16	10.39	15.18	19.33	23.96	27.70
Max.	1.52	2.92	4.50	7.59	11.98	17.39	25.38	32.33	40.07	46.34

Room Breathing Zone

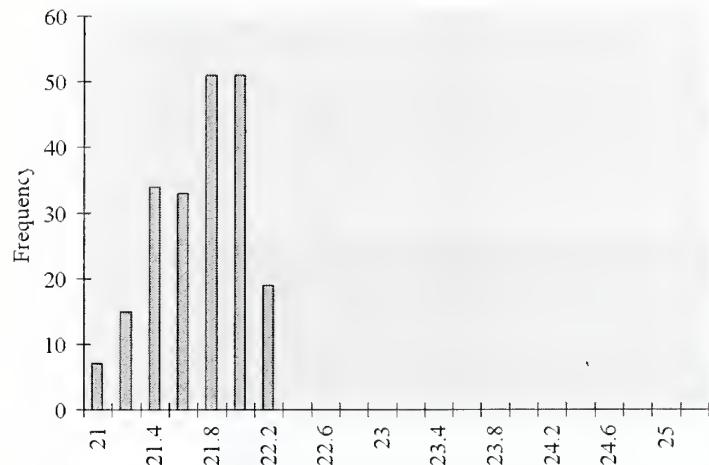
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	20.02	68.03	111	57.04%
S.D.	0.25	0.45	29	
Max.	20.78	69.40	294	

Room Breathing Zone NH3 (ppm)

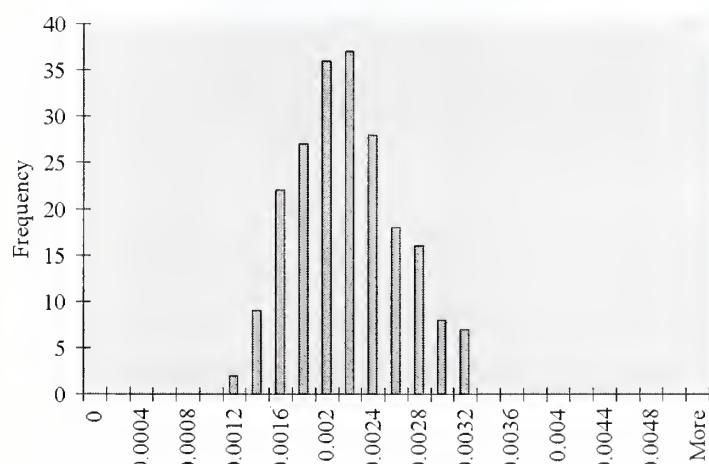
Day	1	2	3	4	5	6	7	8	9	10
Mean	0.06	0.11	0.17	0.29	0.46	0.67	0.98	1.25	1.54	1.79
Max.	0.15	0.30	0.46	0.77	1.22	1.77	2.59	3.29	4.08	4.72

Histogram Distributions

Cage occupied zone average temperature (°C) distribution



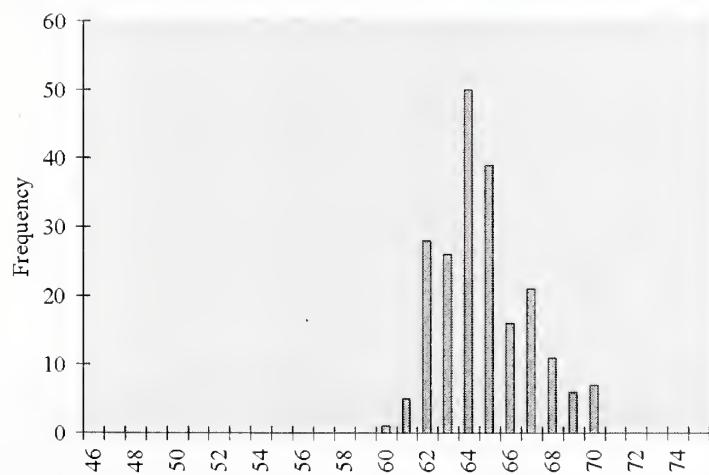
Cage occupied zone average contamination (kg/kg) distribution



Contamination conversion factors
(kg/kg → ppm)

Day	CO ₂	NH ₃
1	785000	414
2	785000	795
3	785000	1225
4	785000	2065
5	785000	3259
6	785000	4730
7	785000	6907
8	785000	8796
9	785000	10902
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



Casename

Case 98**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low ind	17.5	66%	Ceiling	22	50%
Change Station ON alt design	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Perp all 5 on 1 wall

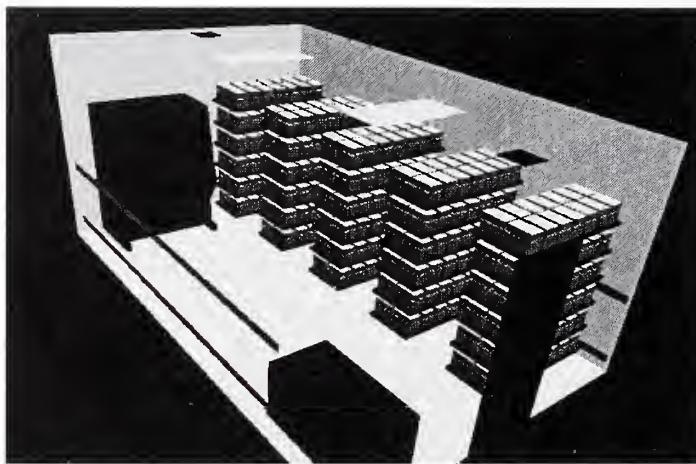
Double

2100

42000 gr

Room
ACH
15

Cage
Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	21.70	71.07	1955	65.78%
S.D.	0.30	0.54	428	3.05%
Max.	22.30	72.13	2712	73.07%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.04	1.98	3.05	5.50	9.05	13.33	19.85	24.85	30.12	33.29
Max.	1.44	2.74	4.23	7.64	12.56	18.50	27.54	34.48	41.79	46.19

Room Breathing Zone

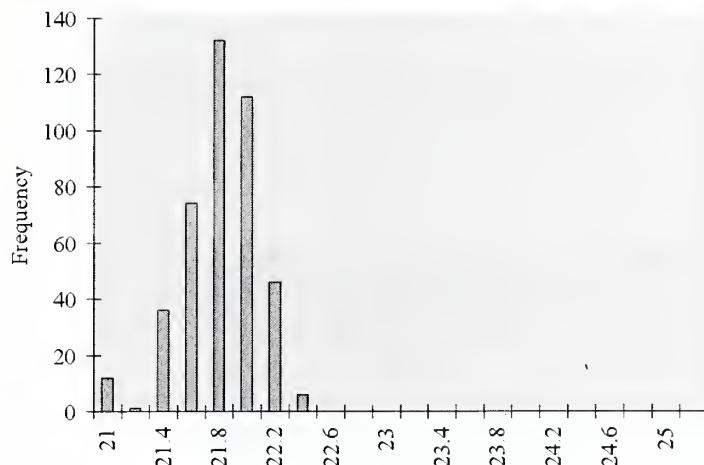
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	19.99	67.98	83	56.88%
S.D.	0.20	0.35	47	
Max.	20.65	69.17	334	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.04	0.08	0.13	0.23	0.39	0.57	0.85	1.06	1.29	1.42
Max.	0.18	0.34	0.52	0.94	1.54	2.28	3.39	4.24	5.14	5.68

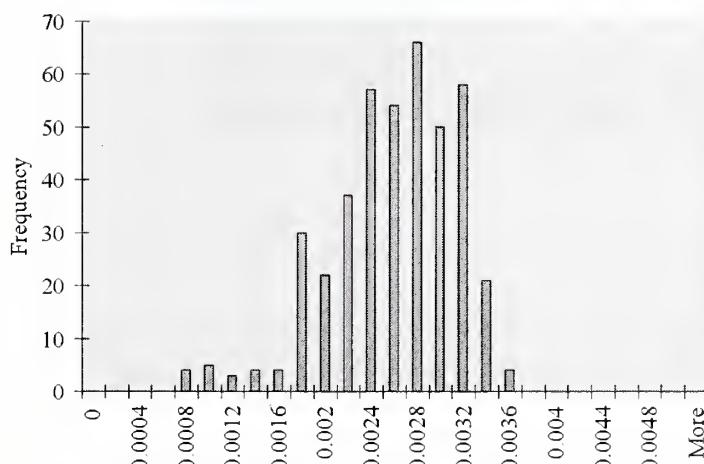
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



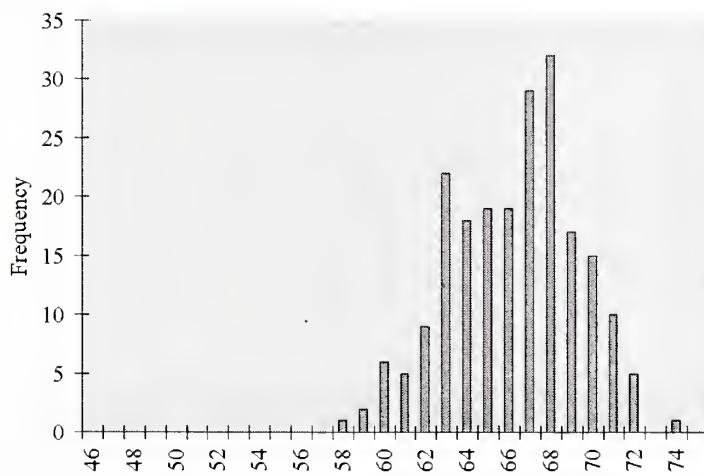
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	417
2	785000	795
3	785000	1225
4	785000	2210
5	785000	3636
6	785000	5355
7	785000	7971
8	785000	9979
9	785000	12096
10	785000	11384

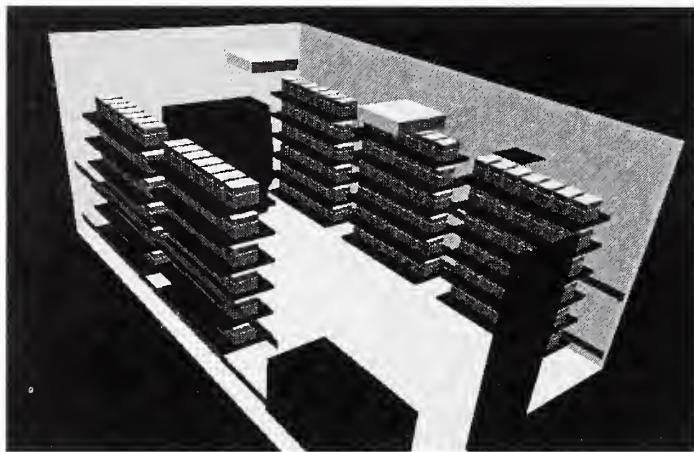
Cage occupied zone average relative humidity (%) distribution



Casename

Case 99**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	22	49%	Ceiling	26	50%
Change Station ON	Rack Orientation	Rack Density	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room ACH
15Cage Condition
Top On**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	24.78	76.60	1984	58.69%
S.D.	0.32	0.58	357	1.55%
Max.	25.73	78.32	2959	61.50%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.03	2.01	3.10	4.46	6.28	8.70	11.91	16.07	21.34	27.89
Max.	1.54	3.00	4.62	6.66	9.36	12.98	17.76	23.96	31.82	41.60

Room Breathing Zone

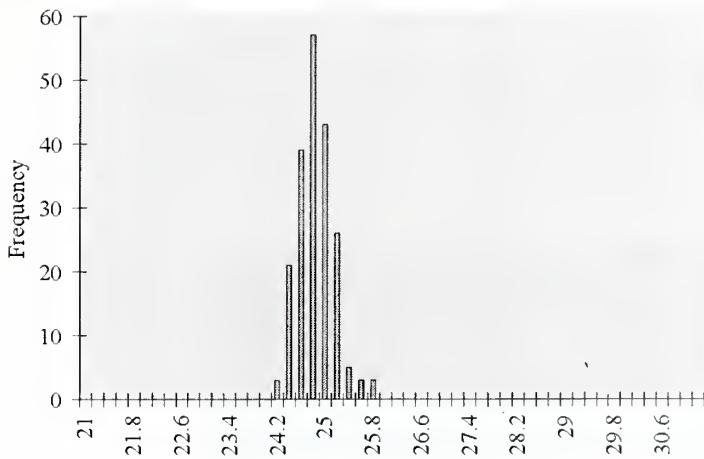
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	23.86	74.94	27	44.18%
S.D.	0.41	0.74	12	
Max.	24.70	76.46	123	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.01	0.03	0.04	0.06	0.09	0.12	0.16	0.22	0.29	0.38
Max.	0.06	0.12	0.19	0.28	0.39	0.54	0.74	1.00	1.33	1.73

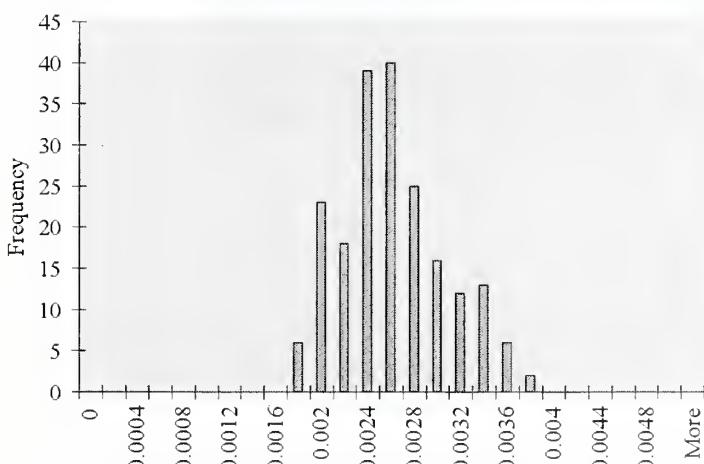
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



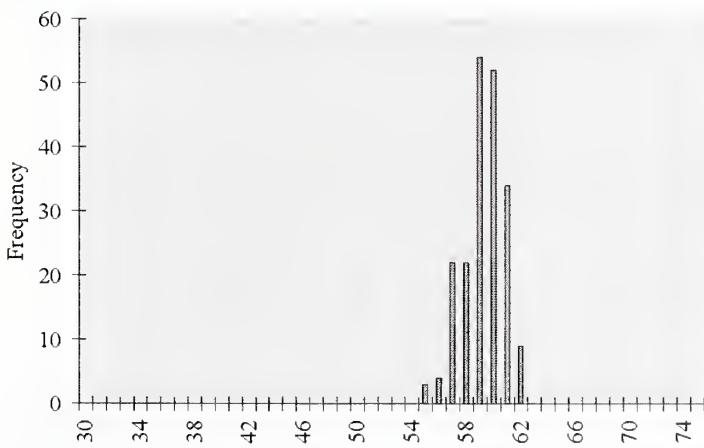
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



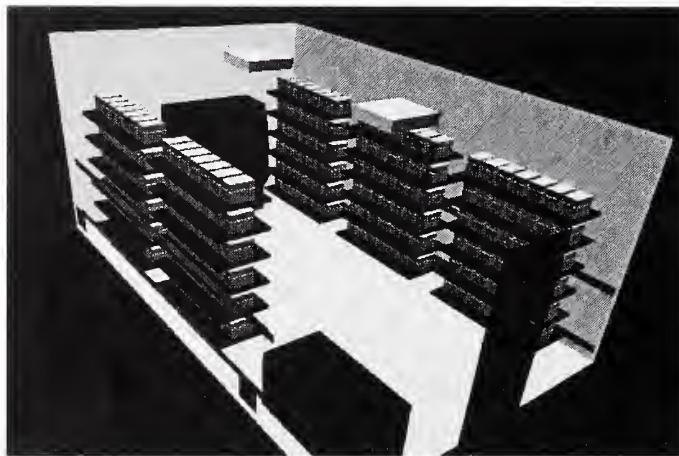
Casename

Case 100**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Radial	22	49%	Low	25	50%
Change Station ON	Rack Orientation On wall	Rack Density Single	Number of Mice in Room	Total mass of Mice in Room	Room Pressurisation neg 100cfm

Room
ACH
15

Cage
Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	25.43	77.77	1730	55.39%
S.D.	0.47	0.85	428	1.89%
Max.	26.84	80.30	3305	60.49%

Cage Occupied Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.90	1.75	2.70	3.89	5.47	7.59	10.38	14.01	18.61	24.32
Max.	1.72	3.35	5.16	7.43	10.46	14.50	19.84	26.77	35.55	46.47

Room Breathing Zone

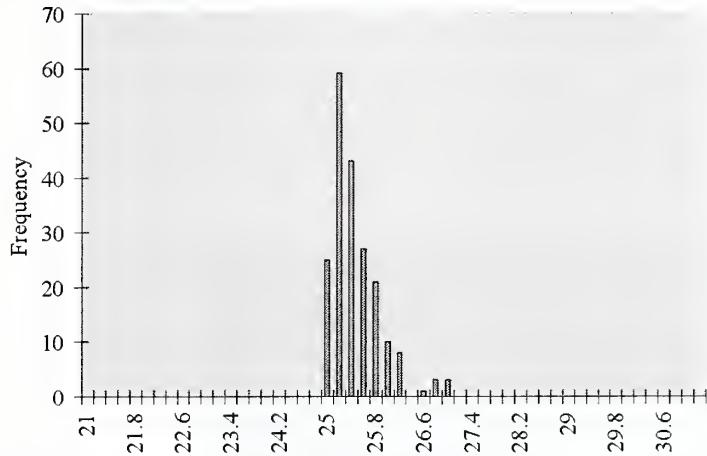
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	24.82	76.67	40	41.72%
S.D.	0.33	0.59	20	
Max.	25.82	78.47	192	

Room Breathing Zone NH₃ (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.02	0.04	0.06	0.09	0.13	0.18	0.24	0.32	0.43	0.56
Max.	0.10	0.19	0.30	0.43	0.61	0.84	1.16	1.56	2.07	2.71

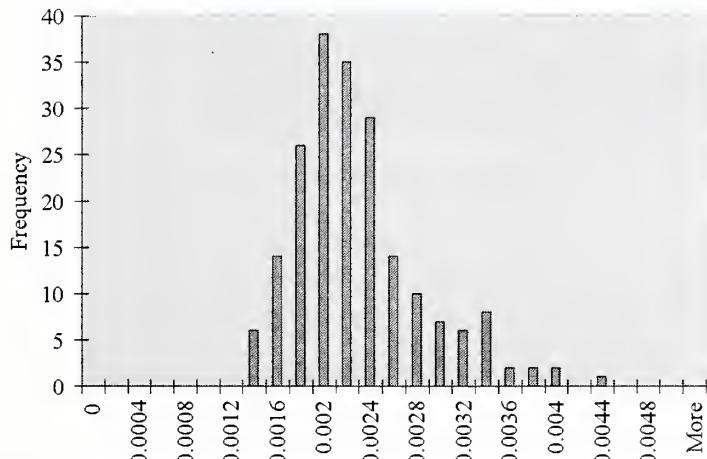
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



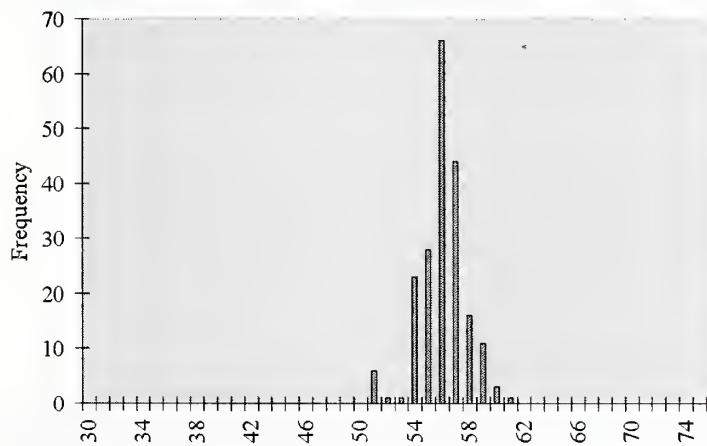
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution



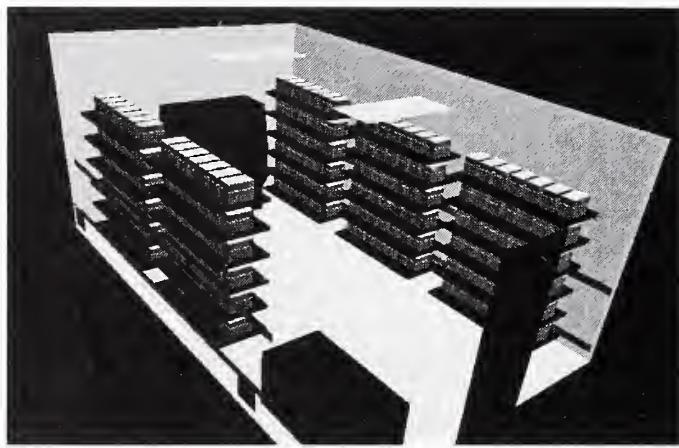
Casename

Case 101**Description**

Supply Configuration	Supply Discharge Temperature (°C)	Supply Discharge RH	Exhaust Configuration	Exhaust Temperature (°C)	Exhaust RH
Low Ind	22	49%	Low	25	50%
Change Station ON alt design	Rack Orientation Perp	Rack Density Double	Number of Mice in Room 1050	Total mass of Mice in Room 21000 gr	Room Pressurisation neg 100cfm

Room
ACH
5

Cage
Condition
Top On

**Analysis Results****Cage Occupied Zone**

	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	26.82	80.27	2400	55.39%
S.D.	0.69	1.23	530	1.89%
Max.	28.34	83.02	3522	60.49%

Cage Occupied Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	1.25	2.43	3.74	5.40	7.59	10.53	14.40	19.43	25.81	33.74
Max.	1.83	3.56	5.50	7.92	11.14	15.45	21.14	28.51	37.87	49.50

Room Breathing Zone

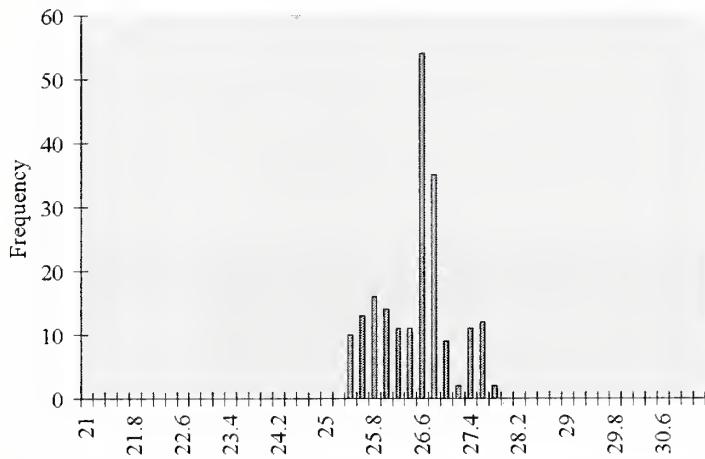
	Temperature		CO ₂	RH
	°C	°F	(ppm)	
Mean	26.24	79.22	284	39.78%
S.D.	1.52	2.74	138	
Max.	28.22	82.79	793	

Room Breathing Zone NH3 (ppm)

Day	1	2	3	4	5	6	7	8	9	10
Mean	0.15	0.29	0.44	0.64	0.90	1.25	1.71	2.30	3.06	4.00
Max.	0.41	0.80	1.24	1.78	2.51	3.48	4.76	6.42	8.53	11.15

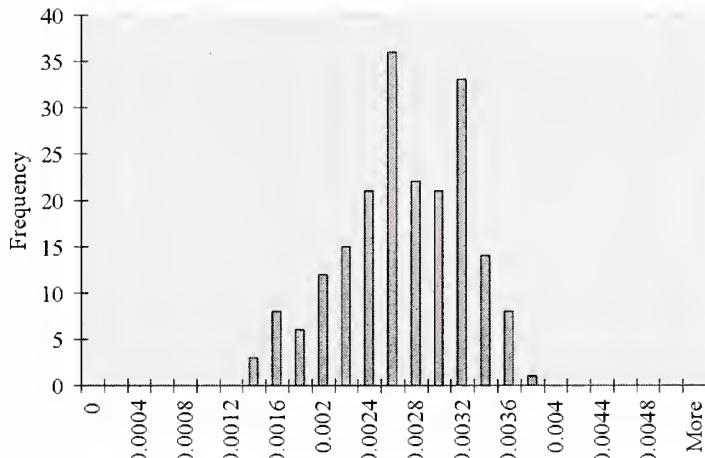
Histogram Distributions

Cage occupied zone average temperature (°C) distribution



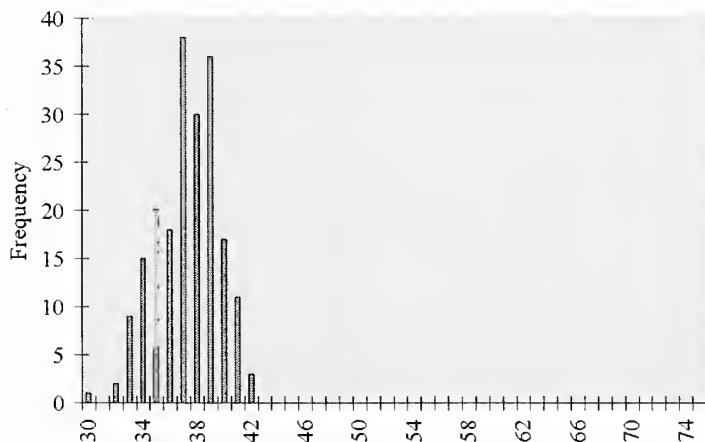
Cage occupied zone average contamination (kg/kg) distribution

Contamination conversion factors
(kg/kg → ppm)



Day	CO ₂	NH ₃
1	785000	408
2	785000	795
3	785000	1225
4	785000	1766
5	785000	2483
6	785000	3443
7	785000	4712
8	785000	6356
9	785000	8442
10	785000	11384

Cage occupied zone average relative humidity (%) distribution





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